



1111 17th Street  
San Francisco, CA 94107  
415-861-6666 • TWX: 910-372-1087

## PRICE SHEET #12

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AMENDS PRICE SHEET

### USER PRICE INFORMATION

EFFECTIVE JUNE 1, 1984

PRO NET

#### MINICOM

(1) SM-1	<b>Minicom®</b> Miniature Belt Pack with permanently attached single-muff headset without signalling	\$ 158.00
(2) DM-1	<b>Minicom®</b> Miniature Belt Pack with permanently attached double-muff headset without signalling	\$ 175.00
(3) SM-PAC1	Package comprised of <b>Minicom®</b> PK-3* single channel power supply and 2 x SM-1 Headset Stations	\$ 352.00
(4) DM-PAC1	Package comprised of <b>Minicom®</b> PK-3* single-channel power supply, portable and 2 x DM-1 Headset Stations	\$ 390.00

\* PK-3 only available with packages

#### POWER SUPPLIES

(5) PS-20	1- or 2-Channel Power Supply—Portable (Rack Mount Kit available. See Accessories)	\$ 250.00
(6) PS-452	2-Channel Power Supply with Power Monitor—Rack Mount	\$ 440.00

#### BELT PACKS AND HEADSET STATIONS

(7) RS-100A	Belt Pack accepts Dynamic Headset	\$ 180.00
(8) CP-100	Belt Pack accepts Carbon or Dynamic Headset	\$ 180.00
(9) CP-300	2-Channel Universal (RTS/Clear-Com) Belt Pack without Signalling (Signalling available. See Options and Item (35) TW-12.)	\$ 220.00
(10) RS-201	2-Channel Belt Pack, Binaural 6-pin Headset and 6-pin Interconnect XLR Connector	\$ 275.00
(11) PC-101A	RS-100A Electronics Module Kit	\$ 160.00
(12) MR-102A	2-Channel Select Dynamic Headset Station, 2 gang Wall Plate	\$ 180.00

**ACCESSORIES (cont'd.)**

(49) BP-10	Battery Pack with Batteries	\$ 100.00
(50) BA-1	System Isolator / Battery Interface	\$ 40.00
(51) WP-2	2-Channel Select Wall Plate—3-pin XLR	\$ 30.00
(52) WP-6	Wall Plate with 6-pin XLR Connector for use with RS-201.	\$ 32.00
(53) QP-100	4-Way Splitter	\$ 45.00
(54) YC-100	Headset Y Cable	\$ 45.00
(55) IC-25	25' Interconnect Cable 3-pin XLR	\$ 35.00
(56) IC-25/6*	25' 3-Pair Interconnect Cable 6-pin XLR (Superflexible Cable)	\$ 86.00
(57) IC-DLC/10*	10' 12-Pair Interconnect Cable with Tuchel Connectors Installed	\$ 210.00
(58) IC-DLC/25*	25' 12-Pair Interconnect Cable with Tuchel Connectors Installed	\$ 225.00
(59) IC-DLC/50*	50' 12-Pair Interconnect Cable with Tuchel Connectors Installed	\$ 250.00
(60) IC-DLC/100*	100' 12-Pair Interconnect Cable with Tuchel Connectors Installed	\$ 300.00
(61) DLC/820018	Female Tuchel Connector Assembly	\$ 37.50
(62) Nema-1	Back Box (Nema) 6"x8"x3" for KB-111A and KB-112	\$ 20.60

\* Other Lengths Available To Order: Consult Factory

**OPTIONS**

SUFFIX	DESCRIPTION	
SIG	Call Light Signalling for CP-300	\$ 53.00
GM	Gooseneck Mic	\$ 145.00
	Factory Installed Electret Mic. (MS-200, MS/RM-400, RM-120A, SB-412)	
SPC	Sportscaster/Two-Channel Output for PIC-4 (6-pin XLR per IFB split-feed)	\$ 40.00

Note: Prices subject to change without notice.



## THE CLEAR-COM SYSTEM

### FEATURES

- Designed for superb intelligibility in high-noise environments
- Multiple channel systems
- Regulated "no-fail®" power supplies
- Visual Signalling standard on most stations
- Interconnects with standard microphone cable
- Selective monitoring and signalling
- Duplex and push-to-talk speaker stations
- Wireless duplex base station/interface
- Two-channel belt-packs on single mic cable
- Selective auxiliary program input
- IFB (Program Interrupt) System
- Interfaces for Telco lines, TV cameras, 2- and 4-wire intercoms
- Battery operation
- 100 station capacity with one power supply
- Over one mile capability
- Ultra-stable sidetone balance
- Automatic headset detection
- High impedance bridging on all stations
- Mic limiter on speaker stations
- Simple installation
- Heavy-duty construction
- Portable, rack-mount, and custom-mount configurations
- Wide variety of headsets, handsets, and mics



## CLEAR-COM CONCEPT

### Quality, Experience, and No-Fail® Design Delivers Proven Reliability.

Clear-Com is the industry's recognized leader in the manufacture of high-quality intercom systems. We enjoy a solid reputation with over a decade of field experience, research, and development, and our equipment is guaranteed to meet or exceed all our published specifications. Not only do our intercoms work beautifully when new, they keep on working in the most demanding environments, thanks to our "no-fail®" system design.

### High Output Level & a Specially Contoured Response Maximize Speech Intelligibility.

Unlike narrow bandwidth telephone systems, Clear-Com's primary function is to convey clear speech communication *under all conditions*. For this reason we have developed a proprietary contoured frequency response. This response is further complemented by high power output levels (greater than 110 dB SPL). Our wide dynamic range assures low distortion, whether you whisper or shout.

### System Basics

Clear-Com is a distributed amplifier system: each remote station contains its own mic preamplifier, power amplifier (for a headset or speaker), and signalling circuitry. Remote intercom stations derive power from a Clear-Com power supply or main intercom station. All stations feature automatic headset detection. This mutes the mic preamplifier when the headset is unplugged, so background noise is not increased by an unused but on-line station.

The Clear-Com System allows hands-free, simultaneous two-way (duplex) communication between all stations. The system is called a

"party line" system (PL) whereby everybody is on-line together.

Basic system capacity is 100 remote stations distributed along one mile of wire (5 miles of wire between stations is possible using Clear-Com's two-wire option). A system's capacity is increased if it includes more than one power supply or main station.

Remote stations bridge the intercom line at a very high impedance, placing a minimum load on the line. This means the audio level remains constant, even when stations are added or switched onto the line.

### Clear-Com Interconnects with Standard Microphone Cable.

Stations interconnect with two-conductor shielded microphone cable using 3-pin, XLR-type connectors. One wire carries audio, the other wire carries DC power to all stations, and the shield acts as a common ground.

There are several advantages to using two-conductor shielded mic cable with 3-pin XLR connectors (standard input on most Clear-Com Stations). First, you don't have to deal with custom-wiring or carry special cables when you set up a system. Second, using separate cables for multiple channels provides individual shields for the channels, which reduces crosstalk. Third, mic cable resists wear and tear, and is the most rugged cable available. And fourth, two or more standard cables are easily plugged together for increasing distance between stations.

### Signalling and Paging

Visual Call Signalling is standard in most Clear-Com Stations. A bright amber light makes it easy to attract the attention of operators who have removed their headsets or turned off their speakers. The signalling circuit is further enhanced by our optional paging function, which turns on the speaker in designated remote stations when the Call signal is activated.



### Sidetone

Adjustable sidetone, another standard Clear-Com intercom feature, allows the intercom user to vary the amount of his or her own voice as heard in the headset/speaker. The user can vary the sidetone level from full null to 35 dB. This circuit also prevents acoustic feedback between the mic and speaker in our speaker stations. Our sidetone circuit is ultra-stable, so you never have to re-adjust sidetone level, regardless of how many stations are added to or removed from the line.

### Create Your Own Unique Intercom System

Clear-Com intercoms fit into these general categories: power supplies, main stations, remote stations, system interfaces, and the DLC Series. We offer a wide selection in each of these categories, enabling the user to custom-assemble just the right system from standard, "off-the-shelf" building blocks. In some cases, to suit a unique application, equipment may be custom-modified at minimal extra cost by ordering factory options, such as goose-neck microphones or our two-wire balanced option for connection to Telco lines.

### Power Supplies

The function of a power supply is to convert the 115 or 230 volt AC mains to 30 volts regulated DC for operating the intercom system. The power supply also provides the proper terminating impedance for the audio circuitry. Our regulated, no-fail® power supplies are designed for long-term reliability, with overload and overvoltage protection, ample filtering, short circuit LED indicators, and pushbutton re-set circuit breakers. We have four different models, ranging from ¼ amp to 2 amp supply, for supporting small or large systems.

### Main Stations

A main station combines the function of a power supply with that of an intercom station. It lets you monitor and talk to one intercom channel or several channels simultaneously, without

tying them together. The main station also provides selective visual signalling and an auxiliary program input that can be fed to the intercom channels.

### Switchboard Main Stations

Tremendous flexibility is afforded by our two unique switchboard main stations. They allow an almost infinite combination of multiple-channel systems to be controlled and instantly reconfigured from one central location without patching.

### Remote Stations

A remote station has talk/listen capability and derives its power from the main station or power supply, via the same cable that carries the audio signal.

A broad variety of remote stations satisfy the diverse requirements of Clear-Com users. Some units mount in the wall, some mount in 19" equipment racks, some mount in standard two-gang outlet boxes, and others are housed in a portable slope-front enclosure or compact belt-pack case. All remote stations can be used with a headset (which consists of one or two earpieces plus a boom mic), a telephone-style handset, a push-to-talk mic, or a gooseneck mic. A few models also have a built-in speaker for paging or convenient listen-only use (speaker stations are also equipped with a mic limiter).

### Two Channels on One Mic Cable

Although most Clear-Com intercoms provide one channel for each cable input, our newest belt-pack provides high-quality communicating ability on TWO separate channels using only the one interconnect cable. Compatible with carbon or dynamic headsets, this unique belt-pack is designed for use with a standard Clear-Com System or with a two-wire intercom system such as RTS.

### System Interfaces

We offer five different interface devices for using Clear-Com in conjunction with other communications equipment. Our rack-mount units interface Clear-Com with carbon mic systems, three-or four-wire systems, telephone lines (with Telco holding coil), television cameras, and two-wire intercom systems such as RTS. Our portable wireless base station interfaces Clear-Com with 49 MHz, duplex wireless intercoms.

### The DLC Series

A modular approach to complex system design led to our development of the DLC Series, a broadcast-standard, high-performance system consisting of rackmount "mainframes" and plug-in modules. Each DLC mainframe provides up to eight intercom channels plus eight IFB channels, as well as a dedicated line. A DLC System can be configured for standard party-line use or as a "point-to-point" system with up to nine stations. Each mainframe includes a gooseneck mic, external speaker jack, optional built-in speaker, internal Channel Assignment Matrix, and standard functions including Stage Announce, All Page/All IFB, Program Input, and Call Signalling.

### Dynamic Headsets

We offer several top-quality Dynamic Headsets. Our specially-designed headsets, handsets, and push-to-talk mics have "battleship" construction and offer the proper electrical and acoustical properties for use with Clear-Com. We have single-muff, double-muff, monaural, binaural, and high-noise styles. Our headsets have noise-cancelling, boom-mounted dynamic mics and high-output earphones. Each is equipped with a six-foot cord and the proper mating connector. Our heavy-duty headsets are fitted with soft "earsocks" so users may comfortably communicate for long periods of time.

You can wear our headsets for long periods of time without ear fatigue. This is because our noise-attenuating earphones reduce outside noise, and high volume levels are not necessary for clarity. This is accomplished by our contoured frequency response, which improves intelligibility. When needed, Clear-Com stations have plenty of power to deliver extremely high volume levels.

### A Full Line of Accessories

Clear-Com accessories include an 8 x 20 slide matrix, a 4-way line splitter for fast convenient interconnection, Y-cables for connecting two headsets to one connector, rack-mount adaptor kits for portable units, and many miscellaneous items such as battery packs, wall plates, and an in-line audio isolator. These all make it easier to assemble the system you need without custom fabrication.



**Battery Operation**

Because Clear-Com equipment will operate from 9 to 32 volts DC, it is easily adapted for battery back-up and portable use.

**We Support Our Customers with Service & Engineering Assistance**

At Clear-Com, intercoms are our only business, so should you ever encounter a problem, our sales engineers will be happy to discuss it with you. Or you can call upon our worldwide dealer network for assistance inside or outside the continental United States.

Standard Clear-Com equipment can be configured in many, many ways, some very complex. So, in addition to the available options, there are times when custom modification may be considered. Our engineering and service departments are available to answer your questions regarding operation, modification, or unusual applications. Clear-Com also provides documentation for special customer needs.

**We Have a Reputation for Top-Quality Construction & Sophisticated Electronic Design**

Rugged packaging guards our intercoms against abuse. The intercom chassis is made of 16 gauge aluminum or stainless steel, with double-sided glass epoxy plug-in PC boards. Circuitry is conservatively engineered for the longest component life. We heavily shield against EMI and RFI pick-up and solid-state dimmer (SCR) noise. We fully test every unit during and after assembly. Clear-Com really works because it is made for the "real world" of entertainment, commercial, and industrial communications.

**Clear-Com: The System That's Here to Stay**

Start out with a basic system, then later expand and diversify by adding to the original equipment. All our main and remote stations are compatible. Thanks to a streamlined, computerized production facility, a knowledgeable sales force, and a continuing commitment to research and development, you can expect Clear-Com to remain the leader in the field.

*Please note: see data sheet on specific product for specifications that apply.*

**S Y S T E M  
S P E C I F I C A T I O N S**

**INTERCOM SYSTEM LEVEL**  
**Main Station/Power Supply**  
**Impedance:** 200Ω  
**Frequency Response:** 150-18k Hz, ±2dB; 150-10k Hz, ±3dB with 5000 ft. of cable at .15 mfd  
**Audio Level:** -18dB nominal; 0dB before clipping  
**Remote Station Bridging Impedance:** >15kΩ from 200-10kHz

**POWER SUPPLY REQUIREMENTS**  
**System DC Voltage:** 9-32 volts DC (30 volts nominal)  
**Ripple & Noise:** <32 millivolts  
**System DC Current per Station:**  
**Headset Station:** 10#ma quiescent, 15 ma average talk, 50 ma with signal  
**Speaker Station:** 20 ma quiescent, 100 ma average talk, 60 ma with signal, 200 ma short circuit

**OPERATING CONDITIONS**  
**Maximum Number of Stations (with 2 amp power supply):** 100 headset stations, no signalling, 50 with signalling; or 20 speaker stations; capacity increases by using 2 or more power supplies.  
**Maximum Distance:** To meet published specs, 5000 feet over #22 wire, 30 pF/foot. For Telco response (250-3.5k Hz), 10,000 feet  
**Recommended Interconnect Cable:** 22 gauge, 2-conductor, individually shielded, 30 pF/foot.  
**Cable Resistance:** 100Ω maximum for remote station stability

**S T A T I O N  
S P E C I F I C A T I O N S**

**MIC AMPLIFIER:**  
**Frequency Response:** 250-12k Hz, contoured  
**Mic Input:** 200Ω  
**Mic Preamp Gain:** 37dB  
**Max Input before Clipping:** -34dB  
**Mic Limiter (if applicable):** controls line level to nominal -18dBv level

**HEADPHONE AMPLIFIER:**  
**Frequency Response:** 150-18k Hz, ±2dB  
**Load Impedance Range:** 300-2000Ω  
**Output Level:** +20dBm, 26 volts p-p at 600Ω  
**Headset Level:** >110dB SPL with standard Clear-Com headset  
**Distortion:** <0.3% THD at 1kHz  
**Amplifier Gain:** 37dB

**SPEAKER AMPLIFIER:**  
**Frequency Response:** 250-10k Hz, ±3dB  
**Power Output:** 4 watts into 8Ω  
**Speaker Level:** >98dB SPL at 3 feet

**PROGRAM AMPLIFIER:**  
**Frequency Response:** 150-18k Hz, ±2dB  
**Input Impedance:** 100kΩ, balanced  
**Input Level:** -15dB nominal; +2dB max

**CONNECTORS:**  
**Dynamic Headset:** 4-pin male (D4M, Switchcraft type)  
**Carbon Headset (if applicable):** ¼" phone jack  
**Line:** 3-pin female & 3-pin male (D3F/D3M, Switchcraft type), or 5-screw terminal block

**HEADSET TYPES:**  
**Dynamic:** earphone, 300-1000Ω; mic, 150-250Ω low impedance (-55dBv)  
**Carbon:** earphone, 300-2000Ω; mic, 50Ω

**GENERAL:**  
**Sidetone Adjustment:** 35dB null to full on  
**Signal Voltage:** 11 volts DC on audio line, minimum  
**Call Light Sensitivity:** 4 volts DC, maximum  
**Signal-to-Noise:** 75dB  
**Equivalent Input Noise:** -120dBv  
**Station Bridging Impedance:** >15kΩ (200-10k Hz)  
**Channel Separation:** >45dB  
**EMI/RF Rejection:** >60dB

**OPERATING TEMPERATURE RANGE:** 0°-50° C, 32°-122° F

Specifications subject to change without notice

\*0 dBv is referenced to 0.775 volts rms.



## ARCH/ENG SPECS

The intercom system shall be of the distributed amplifier type. The system shall operate from a 30 volt DC regulated power supply. Hum and ripple shall not exceed 32 mv. Each headset station shall draw no more than 12 ma without signalling or 50 ma with signalling. Speaker stations shall draw no more than 20 ma quiescent and 100 ma average talk. The power supply shall be capable of delivering sufficient current for the total number of remote stations in the system. The power supply shall operate from 115/230 volts AC, 50-60Hz. The system shall operate in a temperature range of 0-50° C. The intercom system shall be protected from short circuits with a re-settable circuit breaker and visual short circuit indication at the power supply. The power supply shall include a 200Ω terminating network for each channel. The system shall be interconnected with two-conductor shielded mic cable. The system shall be capable of providing a frequency response of 150-10k Hz with 5000 feet of cable. The audio voltage level on the intercom line shall be -18dBv nominally. The remote stations shall incorporate a microphone preamp, power amp, and signalling circuit. They shall have all the necessary controls and connectors to interface with standard Clear-Com equipment. The remote stations shall be of the high impedance bridging type and shall use no transformers in the bridging circuit. The level shall not change when stations are connected or disconnect from the intercom line. All

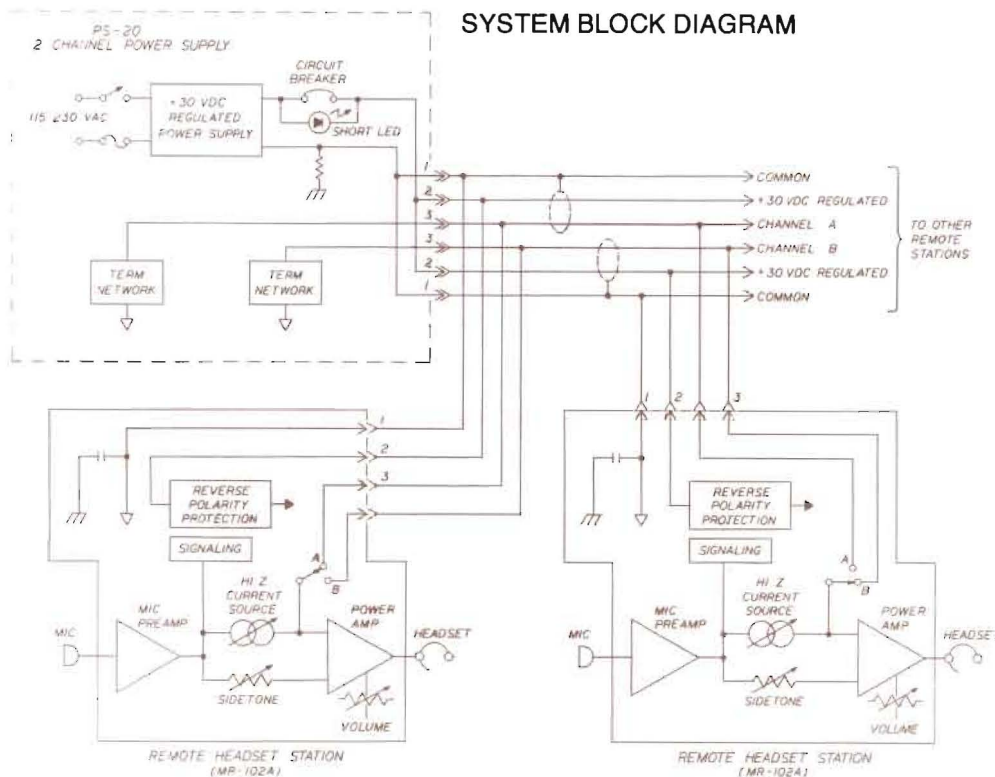
intercom stations shall have a volume control, an adjustable sidetone circuit, a mic on/off switch, call switch, and signal lamp (except RS-201). Permanent mounted, two-channel stations shall have a channel-select switch. Each station shall be supplied with a D4M 4-pin connector for a dynamic headset. The station shall be current-limited, short-circuit-proof, and shall have reverse polarity protection. It shall be field servicable and replaceable. The intercom station preamplifier shall automatically shut off when the station's headset is disconnected. The intercom preamp shall have an overall response of 250-12k Hz contoured to enhance vocal intelligibility. The mic preamp shall accept a dynamic mic of nominal 200Ω impedance at a -55dBv level. The power amp shall be capable of driving two 300-2000Ω headsets to a level of >110dB SPL with less than 0.3% THD. The station bridging impedance shall be greater than 15kΩ over the frequency range of 200-10k Hz. The sidetone adjustment shall be capable of developing a null of 25dB or greater. The headphone amplifier frequency response shall be 150-18kHz, ±2dB. The signal-to-noise ratio shall be a minimum of 75dB with an equivalent input noise of -120dB. Power supply RF EMI rejection shall be greater than 60dB referenced to audio line. The intercom station shall operate from a power source of 9-32 volts DC. The system shall be capable of accepting a line-level program input, balanced. The response shall be 150-18k Hz, ±2dB and have an input impedance of 100kΩ. The program input shall be

selectably assignable to any channel(s) in a multi-channel system. The system shall use dynamic headsets with a headphone impedance of 600Ω and a microphone impedance of 200Ω with nominal output of -55dBv. The signalling circuit shall be of the DC type and shall be impressed on the audio line. The signalling circuit shall be common to all stations on an intercom channel line. Signalling shall be initiated by depressing a call button or switch. Signalling shall be acknowledged by the illumination of a high-intensity lamp on the front of each station so equipped. Signalling shall be selectable (send only) on multi-channel systems. The system shall be capable of monitoring two or more channels separately or simultaneously without tying the channels together. Channel separation shall be greater than 45dB.

Speaker stations shall have the same specifications as headset stations with additional features: the mic preamp shall contain a mic limiter to hold the intercom line at nominal level of -18dBv. The speaker station shall contain an 8 or 16Ω, high-efficiency speaker. The speaker power amp shall be capable of delivering 4 watts into 8Ω. The speaker response shall be 250-10k Hz, ±3dB. The speaker Sound Pressure Level shall be greater than 98dB at 3 feet. An option available on speaker stations shall be the capability of performing as a paging speaker station, utilizing the signalling circuitry for remote page operation.

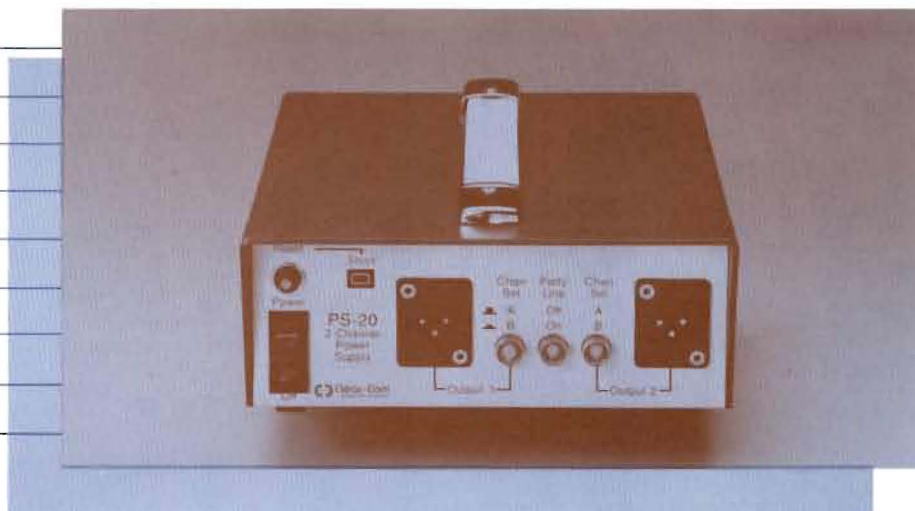
The system shall be called a Clear-Com System.

SYSTEM BLOCK DIAGRAM





# P O W E R   S U P P L Y



## PS-20 TWO-CHANNEL POWER SUPPLY

### F E A T U R E S

- Supports up to 60 Remote Stations
- Provides two channels of two-way communications
- Line-and-load regulation & over-voltage protection
- Compatible with all Clear-Com Intercoms
- Operates from 105-125 VAC or 210-260 VAC
- Can be paralleled with other Power Supplies/Main Stations for increased system capacity & back-up support
- Heavy-duty construction
- Portable, lightweight, weather-resistant enclosure
- Available with optional rackmount kit



### D E S C R I P T I O N

The PS-20 is a fail-safe, portable power supply that provides two separate channels for smaller Clear-Com Systems. It supplies 30 volts at one ampere (total for both channels) and terminates each channel. The PS-20 provides circuit-breaker protection against shorts in the cabling. In addition, over-voltage protection saves the system in the rare case of internal power supply failure.

The PS-20 provides power for up to 60 remote headset stations or 12 remote speaker stations. It features a Short Circuit Indicator Lamp and a Circuit-Breaker Re-set Button. If there is a short circuit or wire reversal in the system cabling, the lamp will light. Pressing the button after the short is removed instantly restores normal operation.

The PS-20 front panel has two 3-pin, XLR connectors for output to remote stations located near the Power Supply; each connector is switch-selectable to Channel A or Channel B (Party-Line). A third switch combines both channels while maintaining proper termination. The PS-20 rear panel provides four 3-pin, male XLR connectors for intercom output to the system (two in parallel for Channel A, the same for Channel B).

The Power Supply connects to remote stations with standard, two-conductor shielded mic cable.

The PS-20 satisfies the highest standards of reliability and

performance, providing trouble-free service over a wide range of environmental conditions. It can tolerate an ambient temperature of 32-140°F without failure.

### A C C E S S O R Y

#### Rack Mount Kit

Adapts PS-20 enclosure to rack-mount type chassis; fits in standard 19" equipment racks.



SPECIFICATIONS

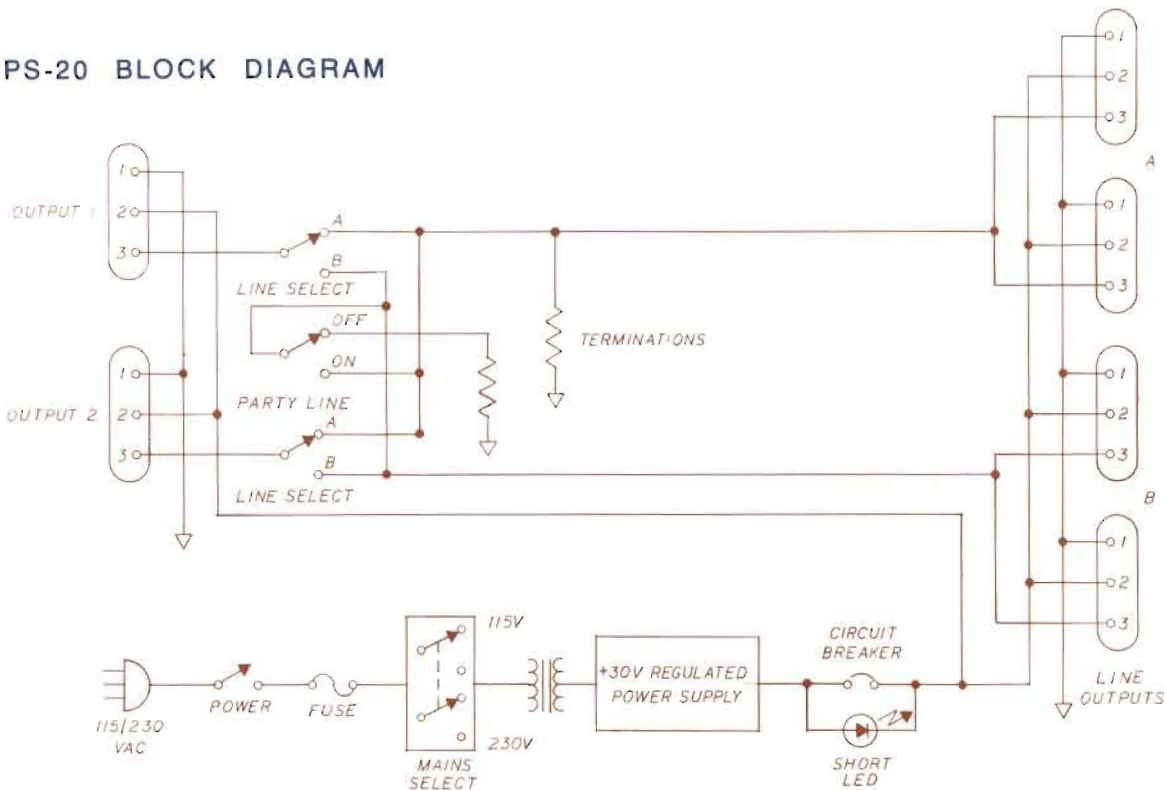
**POWER SUPPLY:**  
**Output Voltage:** 30 VDC, regulated  
**Output Current:** 1 amp max  
**Load Regulation:** 30V±1V at .5a, 26V at 1a  
**Line Regulation:** ±.1V from 105-125 VAC line voltage  
**Ripple:** <3mV  
**Protection Circuits:** Circuit breaker and overvoltage crowbar in DC circuit, fuse in primary transformer.  
**Connections:** Provides two 3-pin male XLR connectors per channel on rear panel. Two additional front panel connectors may be switched independently to either channel. A front panel switch combines both channels while maintaining proper termination.  
**SYSTEM SPECIFICATIONS:**  
**System Impedance:** 200Ω  
**System Level:** -15dBv nominal, 0dBv before clipping\*  
**System Capacity:** Will support 60 headset or 12 speaker stations  
**POWER REQUIREMENTS:** Line voltage 105-125 or 210-250 VAC, 50-60Hz, selectable from rear panel. 60 VA max  
**ENVIRONMENTAL:** Operating temperature range 0-50°C (32-122°F)  
**DIMENSIONS:** 6 11/16" W x 9 7/16" D x 2 5/8" H (170mm W x 240mm D x 67mm H)  
Specifications subject to change without notice.  
\*0 dBv is referenced to 0.775 volts rms.

ARCH/ENG SPECS

The power supply shall be a solid state two channel portable unit. It shall provide an output of 30 volts DC, regulated, with a maximum current capacity of 1 ampere. The power supply shall have line and load regulation and overvoltage protection. It shall have short circuit protection and a front panel LED indicator, which shall light only when the circuit breaker trips in response to a short. The power supply shall resume normal operation as soon as the short is cleared and the circuit breaker is reset. The power supply shall have the capacity to power 60 headsets or 12 speaker stations. Two separately terminated audio channels shall be provided (A and B). A front panel switch shall combine the two channels into one while maintaining proper 200Ω termination in either combined or separate mode. The unit shall have four male 3-pin XLR-type connectors on the rear panel, two for each channel. On the front panel, two additional XLR connectors shall be independently switchable to either channel. The power supply shall operate on an AC line voltage of 105-125 or 210-250 VAC, 50 to 60Hz,

switch-selectable from the rear panel. The maximum power consumption shall be 60 watts. Its operating temperature range shall be 0-50°C (32-122°F). Its dimensions shall not exceed a width of 6.70", a depth (front to back) of 9.44", and a height (excluding feet) of 2.62". It shall weigh no more than 4.5 lbs. It shall have all necessary controls and connectors for compatible operation with Clear-Com products, and shall be called a Clear-Com PS-20.

PS-20 BLOCK DIAGRAM





# P O W E R   S U P P L Y



## PS-452 TWO-CHANNEL POWER SUPPLY

### F E A T U R E S

- Supports up to 100 Remote Stations on two channels
- Accepts 1 or 2 Program inputs, assignable to one or both channels
- Individual Program volume controls
- Power Monitor checks current drain of each channel
- Line-and load regulation & over-voltage protection
- Compatible with all Clear-Com Intercoms
- Operates from 105-125 VAC or 210-260 VAC
- May be paralleled with other Power Supplies/Main Stations for increased system capacity & back-up support



### D E S C R I P T I O N

The PS-452 is a fail-safe, broadcast-standard power supply that supports a two-channel Clear-Com System. It supplies 30 volts at two amperes (total for both channels). The PS-452 provides the intercom system with circuit-breaker protection against shorts in the cabling. In addition, over-voltage protection saves the system in the rare case of internal power supply failure.

The PS-452 provides power for as many as 100 remote headset stations or 20 remote speaker stations. It features a Power Monitor that keeps constant check of each channel's current drain. With two rows of red and amber LEDs, the Power Monitor provides instant fault indication to help determine potential line problems in the intercom system.

The PS-452 rear panel has six 3-pin, XLR connectors for intercom output (three in parallel for Channel A, the same for Channel B). It also contains two auxiliary inputs (3-pin XLR) for external program audio signals. The PS-452 can mix one or two program signals with the intercom audio on one or both channels. Volume controls on the front panel allow level adjustment of each Program individually.

The PS-452 contains two easily accessible, internal slide-switches to provide the necessary audio termination for each channel.

The Power Supply connects to remote stations with standard, two-conductor shielded mic cable. The unit mounts in a standard 19"

equipment rack, using only 3-1/2" vertically.

Clear-Com designed the PS-452 as a "half-regulated" supply, which means that, up to a certain point (approximately half the rated output), it provides a regulated 30 volts. When the current drain goes over 1 amp, the output is reduced. The PS-452 efficiently continues to support a full-capacity system at the reduced output, unlike standard types of regulator circuits that shut down when current drain increases.

The PS-452 conforms to the highest standards of reliability and performance, providing trouble-free service over a wide range of environmental conditions. It may be rack-mounted in an enclosed space and can tolerate an ambient temperature of 32°-120°F without failure.



SPECIFICATIONS

**POWER SUPPLY:**  
Output Voltage: 30v  
Circuit Breaker Rating: 0.8 amp hold (each channel)  
Output Current: 2 amp hold (total)  
Load Regulation: 30v, ±1v, 0-1 amp; 24v at 2 amps  
Line Regulation: 0.1 volt from 105-125 VAC input voltage  
Ripple: <1 mv  
Protection Circuitry: Circuit breaker, internal primary fuse, and over-voltage crowbar circuit

**PROGRAM AMPLIFIERS:**  
Transformerless Balanced Differential Input  
Frequency Response: 150-18kHz (±2dB)  
Input Impedance: 47kΩ balanced  
Input Level: +2dBv for maximum output; -15dBv\* nominal

**SYSTEM SPECS:**  
Impedance: 200Ω  
Level: 15dBv nominal; 0dBv before clipping\*  
Remote Station Capacity: 100 headset stations; 20 speaker stations

**CONNECTORS:**  
Program Input: 2 D3F (3-pin female)  
Intercom Output: 6 D3M (3-pin male/3 in parallel for Channel A; 3 in parallel for Channel B)

**POWER REQUIREMENTS:** 105-125 VAC, 50-60Hz, 80 watts maximum. Maximum power consumption 110VA. May be wired for 210-260 VAC.

**ENVIRONMENTAL:**  
Temperature range: 0-50° C (32-122° F)

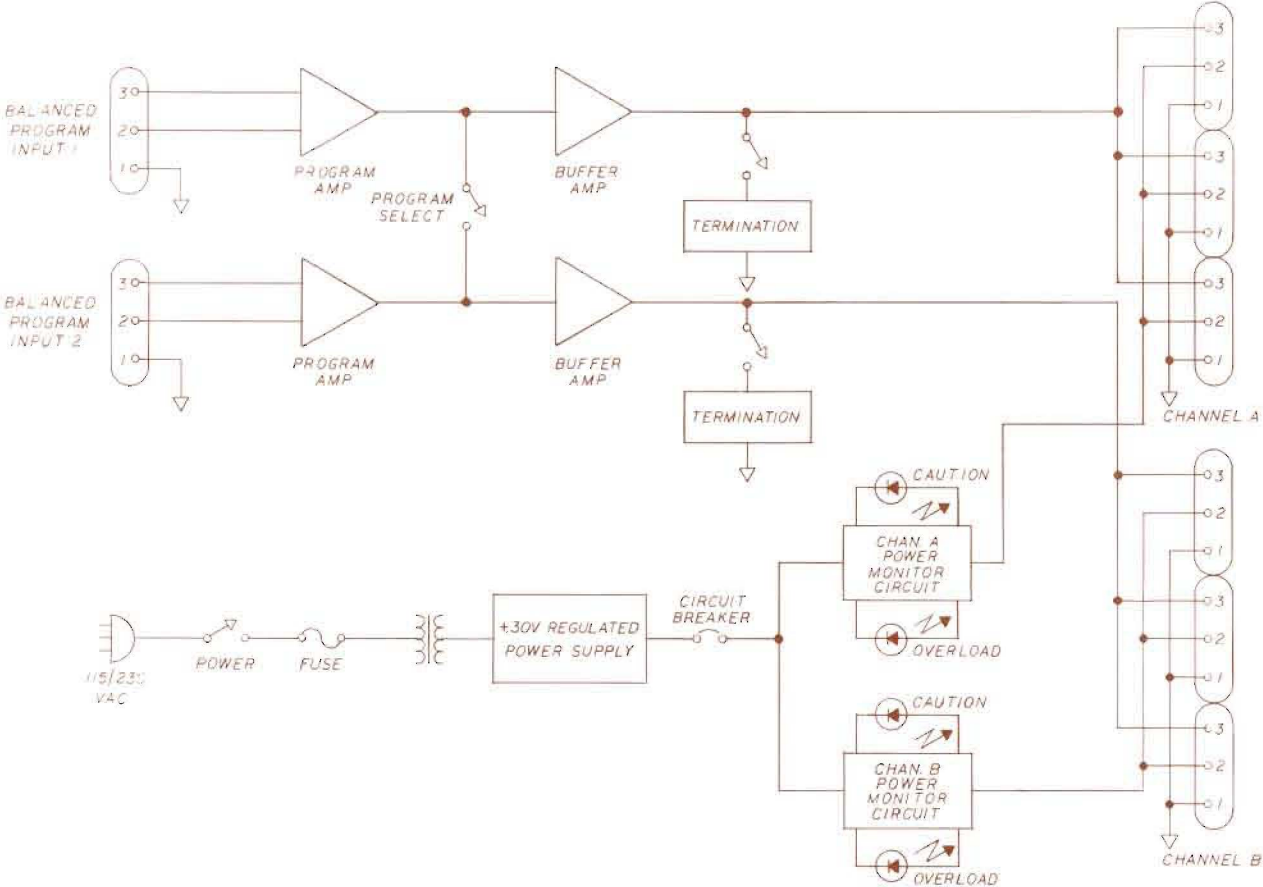
**DIMENSIONS:**  
19" x 3.5" x 7" deep, standard rack mount  
483mm x 89mm x 178mm

Specifications subject to change without notice  
\*0 dBv is referenced to 0.775 volts rms.

ARCH/ENG SPECS

The power supply shall be a solid-state, rack-mount unit. It shall supply an output of up to 2 amperes a two-channel intercom system. The power supply shall have line-and-load regulation and over-voltage protection. It shall have short circuit protection with an LED indicator. When the power supply detects a short circuit, the LED shall illuminate; removal of the short shall restore the power supply to normal operation. The power supply's front panel shall contain a Power Monitor that checks the current drain of each channel and uses red and amber LEDs to indicate potential line problems. The power supply shall have the capacity to power 100 remote headset stations or 20 remote speaker stations. The power supply shall accept two auxiliary program inputs, and each input shall have a volume control on the front panel. The program inputs shall be selectably assignable to Channel A, B, or both. The power supply shall have six 3-pin XLR-type male connectors on the rear panel for Channel A and B outputs. The power supply shall have two 3-pin XLR-type female connectors on the rear panel for the auxiliary program inputs. The auxiliary program inputs shall have a frequency response of 150Hz-18kHz (±2dB), and an input impedance of 47kΩ (balanced or unbalanced) with an input level of +2dB for maximum output. The power supply shall terminate the intercom system with an impedance of 200Ω for each channel. It shall have a hum and ripple factor of less than 1 mv. The power supply shall operate from 105-125 VAC or 210-260 VAC, 50-60Hz, at 80 watts maximum with maximum power consumption of 110 VA. It shall have an operating temperature range of 0-50° C, 32-122° F. The dimensions shall not exceed 19" x 3.5" x 7" deep, and the weight shall not exceed 10 pounds. The power supply shall have all the necessary controls and connectors to interface to all Clear-Com products. The power supply shall be called a Clear-Com PS-452.

PS-452 BLOCK DIAGRAM





# R E M O T E   S T A T I O N



## RS-100A BELT-PACK

### F E A T U R E S

- Visual Call Signalling
- Combination Mic-On/Mic-Off/Call switch
- Headset volume control
- Ultra-stable, adjustable sidetone control
- Mic limiter
- Easy interconnection
- Input and extension connectors for convenient loop-through set-up
- Super-rugged and lightweight



### D E S C R I P T I O N

The RS-100A is a versatile remote station designed as a belt-pack. Housed in an aluminum chassis backed with a sturdy spring clip, the RS-100A allows talking, listening, and visual signalling on any channel in the Clear-Com System.

The broadcast-standard RS-100A features Clear-Com's excellent speech intelligibility in all high- and low-noise environments. It drives a standard Clear-Com headset to levels greater than 110 dB SPL, and can support two dynamic headsets at once if connected with a Y-cord.

The RS-100A features "automatic headset detection," which mutes the mic preamp when the headset is not plugged in. Therefore, an unused yet on-line belt-pack does not increase background noise. The RS-100A also provides a recessed sidetone control that adjusts the level (from full null to at least 35 dB) of the operator's voice as heard in his or her headset. Sidetone needs to be adjusted just once, if at all, and won't fluctuate when other stations join or leave the intercom system.

The RS-100A features Visual Call Signalling. This attracts the attention of operators who have removed their headsets or turned off their speakers. Setting the belt-pack's toggle switch to the "Call"

position activates the signal circuit at all stations using the same channel(s). The RS-100A has an amber lamp that glows brightly when another operator activates the signal circuit.

Standard 2-conductor shielded mic cable connects the RS-100A to the intercom system. The belt-pack provides two 3-pin, XLR connectors (one male, one female) for input and loop-through extension of the intercom line.

Bidirectional current sourcing and low current drain allow as many as 100 RS-100A belt-packs to operate along one mile of wire with no significant loading effects. The belt-pack has an extended power supply range so that it may be powered by a portable 12-volt battery pack. Audio level never fluctuates, even when other stations join or leave the intercom line. The RS-100A's high-performance circuitry virtually eliminates all hum and noise pick-up from SCR dimmers and AC power sources.

#### ACCESSORY

##### BP-10 BATTERY PACK

A portable, belt-worn power pack that operates two Remote Stations for over ten hours. Includes three 9V batteries, on/off switch, and termination switch. Provides 2' mic cable with 3-pin connector for output to remote station.



## SPECIFICATIONS

**AMPLIFIER DESIGN:** Solid-state integrated circuit amplifiers which include a mic preamp, headset power amp and signalling circuitry. Current limited & short circuit proof with reverse polarity protection.

### MICROPHONE PRE-AMP:

Microphone Input: 200 $\Omega$  dynamic

Mic Pre-Amp Gain: 37dB

Maximum Input Before Clipping: -34dBv\*

Mic Pre-Amp Frequency Response: 250Hz-12kHz with a contoured response to enhance voice intelligibility

### HEADPHONE AMPLIFIER:

Load Impedance Range: 300-2,000 $\Omega$

Output Level: +20dBm before clipping

Headset Level: 110dB SPL with standard Clear-Com headsets

Distortion: 0.1% THD @ 1kHz

Amplifier Gain: 40dB

Frequency Response: 150Hz-18kHz ( $\pm 2$ dB)

### CONNECTORS:

Dynamic Headset: D4M 4-pin male Switchcraft type

Line: 1-D3M, 1-D3F 3-pin, Switchcraft type

### ENVIRONMENTAL:

Ambient Operating Temperature: 0-50°C, 32-140°F

Storage: -55-125°C, -62-257°F

Humidity: 0-90% relative humidity

### GENERAL:

Station Bridging Impedance: >20k $\Omega$  (200Hz-10kHz)

Line Level: -15dBv max\*

Side Tone Adjustment: 35dB null to full on

Signal to Noise: 75dB

Equivalent Input Noise: -121dBv\*

Power Supply Rejection: >60dB RFI and EMI ref. audio line

Power Requirements: 10 ma quiescent/12 ma

average talk/45 ma signaling

DC Voltage Range: 12-32 Volts (28 volts nominal)

Dimensions: 2.75" x 4.9" x 1.6"

(2.9 x 12.4 x 4.1 cm)

Weight: 14 oz.

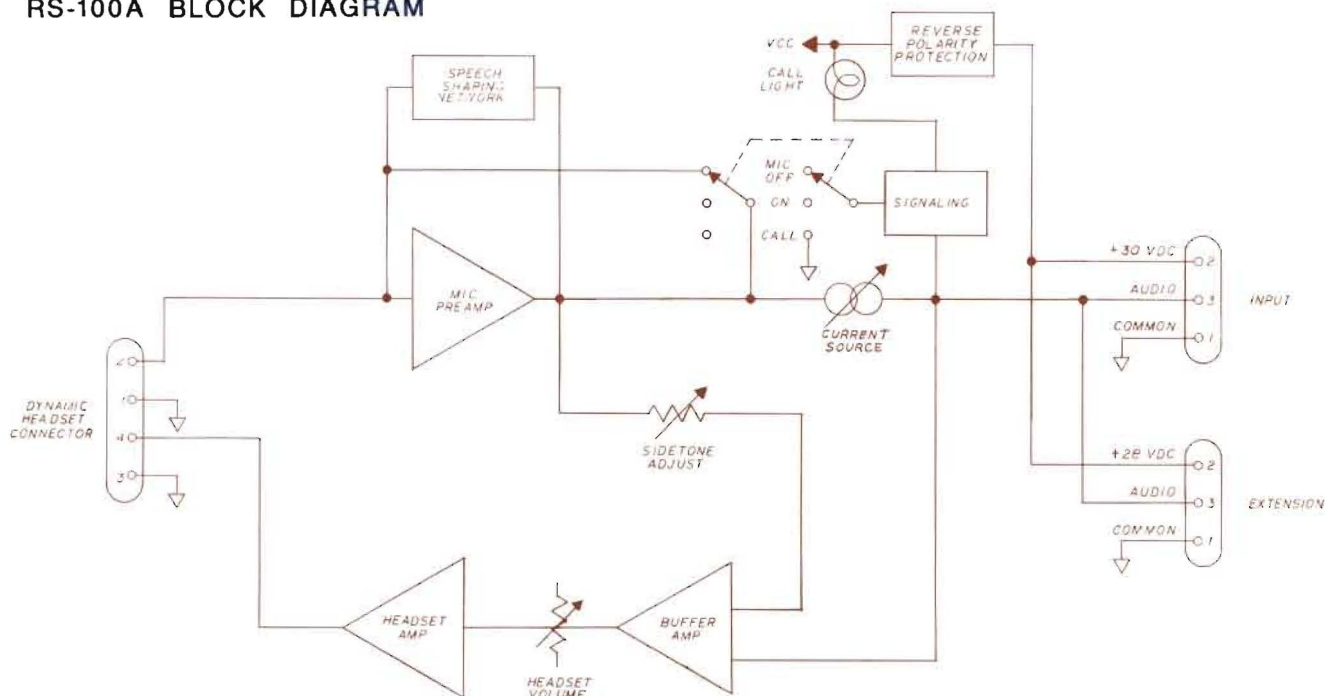
Specifications subject to change without notice

\*0 dBv is referenced to 0.775 volts rms.

## ARCH/ENG SPECS

The intercom station shall be of the belt-pack type. It shall have all the necessary controls and connectors to interface to a standard Clear-Com system. The intercom station shall be constructed of 16 gauge aluminum and shall be supplied with a belt mounting clip. The remote station shall have an adjustable volume control and contain an adjustable side tone circuit. The station shall also incorporate a combination mic on/off and momentary call signal switch on the front panel. A signal lamp for visually identifying in-coming calls shall also be provided. The station shall be supplied with a Switchcraft D4M connector for interconnect to a dynamic headset. It shall have 3-pin XLR (one male and one female) connectors to provide interconnect to the system and provide loop-through convenience. The intercom station electronics shall consist of a mic preamplifier, power amplifier and signalling circuits. It shall be current limited and short circuit proof and shall have reverse polarity protection. It shall be field serviceable and replaceable. The intercom station preamplifier shall automatically shut off when the station's headset is disconnected. The intercom preamplifier shall have an overall response of 250Hz-12kHz contoured to enhance vocal intelligibility. The mic preamplifier shall accept a dynamic mic of nominal 200 $\Omega$  impedance at a -55dB level. The power amplifier shall be capable of driving two 300 $\Omega$  to 2000 $\Omega$  headsets to a level of +20dBv with less-than 0.5% distortion THD. The station bridging impedance shall be greater than 20k $\Omega$  over a frequency response of 200Hz to 10kHz. The headphone amplifier frequency response shall be 150Hz to 18kHz  $\pm 2$ dB. The signal-to-noise ratio shall be a minimum of 75dB with an equivalent input noise of -118dB. Power supply RFI EMI rejection shall be greater than 60dB referenced to audio line. It shall operate from a power source of 12-28 volts and shall draw no more than 10 ma quiescent. The dimensions shall not exceed 2.75" x 4.9" x 1.6" (2.9cm x 12.4cm x 4.1cm). The weight shall be 14oz. It shall be called a Clear-Com RS-100A.

## RS-100A BLOCK DIAGRAM



# R E M O T E   S T A T I O N



## CP-300 BELT-PACK

### F E A T U R E S

- Switch-selectable compatibility with Clear-Com and RTS-type systems
- Single- or two-channel operation
- Operates with dynamic or carbon headset
- Headset volume control
- Channel-Select and locking/momentary "Mic-On" rocker switches
- Mic limiter
- Visual Call Signalling available as an option
- Easy interconnection
- Input and extension connectors for convenient loop-through set-up
- Super-rugged and lightweight



## D E S C R I P T I O N

The CP-300 is an extremely versatile remote station designed as a belt-pack. Housed in an aluminum chassis backed with a sturdy spring clip, the CP-300 allows switch-selectable, 1- or 2-channel operation within:

- the Clear-Com System (one channel on one mic cable)
- any two-wire intercom system such as RTS (two channels on one mic cable) or
- a Clear-Com System that includes the TW-12 Interface (two channels on one mic cable).

The broadcast-standard CP-300 allows selectable talking and/or listening on one or two separate channels. Compatible with all Clear-Com and two-wire type intercom systems such as the RTS "TW" System, the CP-300 features Clear-Com's excellent speech intelligibility in all high- and low-noise environments. It has the same pin-to-pin connections as RTS intercoms, with **better** performance.

Designed specifically for camera operators and other teleproduction personnel, the CP-300 operates with a carbon headset or a dynamic headset. It drives a standard Clear-Com headset to levels greater than 110 dB SPL, and can support two dynamic headsets at once if connected with a Y-cord.

The CP-300 features "automatic headset detection," which mutes the mic preamp when the headset is not plugged in. Therefore, an unused yet on-line belt-pack does not increase background noise. The CP-300 also provides a recessed sidetone control that adjusts the operator's voice level (from full null to at least 25dB) as heard in his or her headset.

As an option, the CP-300 includes Visual Call Signalling. Call signalling attracts the attention of operators who have removed their headsets or turned off their speakers. The belt-pack's Call button activates the signal circuit at all stations using the same channel(s). This Call button glows brightly when another operator activates the signal circuit.

Whether you need one or two channels, standard 2-conductor shielded mic cable connects the CP-300 to the intercom system. The belt-pack provides two 3-pin, XLR connectors for input and loop-through extension of the intercom line.

Bidirectional current sourcing and low current drain allow as many as 100 CP-300 Belt-Packs (powered by the suitable Clear-Com Main Station/Power Supply) to operate along one mile of wire with no significant loading effects. The belt-pack has an extended

*continued*



power supply range, so it may be powered by a portable 12-volt battery pack (ideal for ENG/EFP and other remote production applications). CP-300 audio and sidetone levels never fluctuate, even when other stations join or leave the intercom line. High-performance circuitry virtually eliminates all hum and noise pick-up from SCR dimmers and AC power sources.

ACCESSORY

BP-10 BATTERY PACK

A portable, belt-worn power pack that operates two Remote Stations for over ten hours. Includes three 9V batteries, on/off switch, and termination switch. Provides 2' mic cable with 3-pin connector for output to remote station. Perfect for ENG, EFP, and other remote applications.

OPTION

VISUAL CALL SIGNALLING

SPECIFICATIONS

**Note:** When 2 figures are separated by a slash (/), the first is for RTS type mode, the second for standard Clear-Com.

**Circuit Design:** IC amplifiers. Current limited with reverse polarity protection

MICROPHONE PREAMP

**Input:** Low impedance (>1kΩ) for 200Ω nominal dynamic type element. Also accepts a carbon mic.  
**Input Level:** -55dBv nominal, -19dBv max before clipping\*  
**Limiter Compression Range:** +50/ 37dB before limiting

HEADPHONE AMPLIFIER

**Output:** Drives any headset load ≥50Ω to full output before clipping (+15dBv)  
**Gain From Intercom:** +24/+37dB  
**Frequency Response:** 200Hz-12kHz  
**Distortion:** <.3%

SIGNALLING (OPTIONAL)

**Clear-Com Mode:** 4VDC minimum call light sensitivity, 11 VDC maximum signalling voltage output  
**Tone Mode:** -30dBv maximum call light sensitivity, -10dBv minimum signalling output.  
**Frequency Tolerance:** ±100Hz on output, ±500Hz receiving

OPERATING CONDITIONS

**Line Level, Nominal:** 5/-15dBv  
**Signal to Noise:** 60/75dB  
**Sidetone:** 35dB null to full on  
**Station Bridging Impedance:** >20kΩ  
**Power Requirements:** 12-32V at 25-40mA, +30ma signalling

CONNECTORS

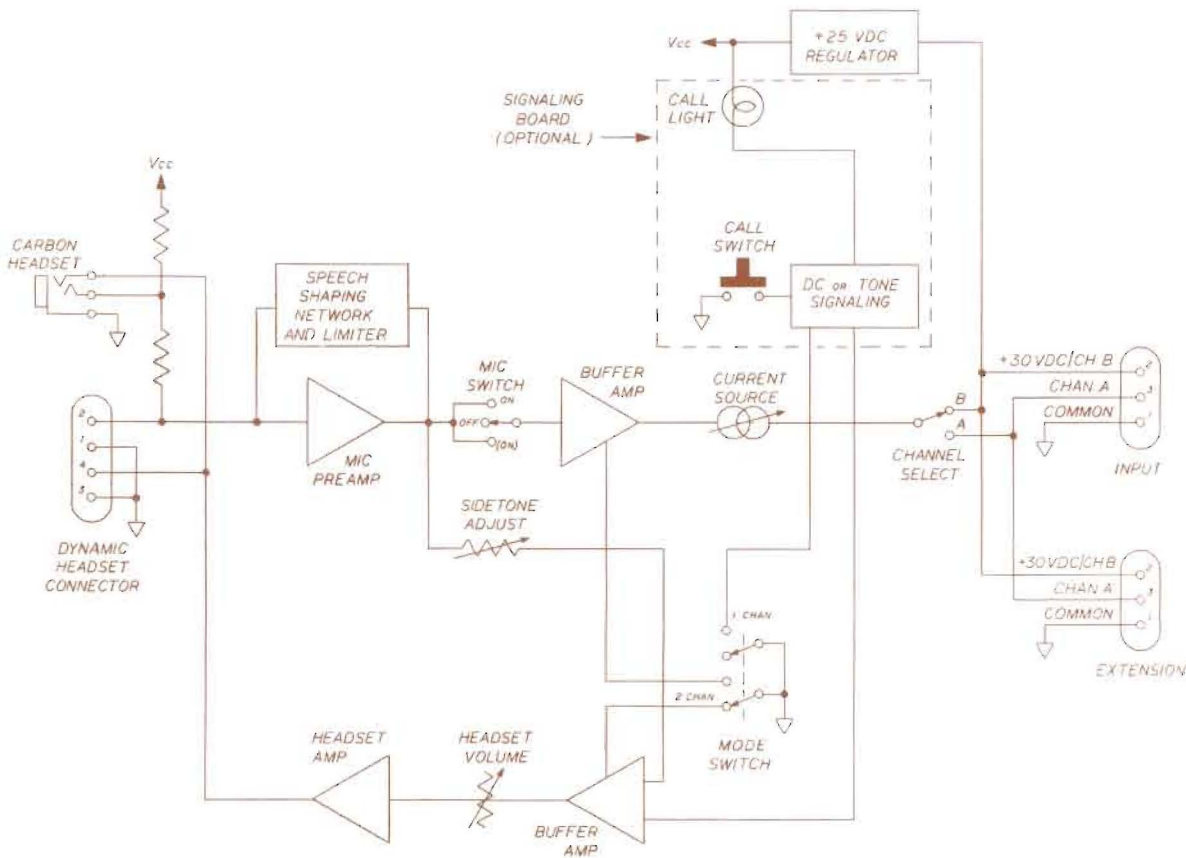
**Headset:** 4-pin male XLR  
**Intercom Lines:** Two 3-pin XLR, 1 male and 1 female for loop through  
**Carbon Headset:** 1/4" dual circuit phone jack

Specifications subject to change without notice  
\*0 dBv is referenced to 0.775 volts rms.

ARCH/ENG SPECS

The remote station shall be a compact, portable, belt-pack-type. It shall have two separate intercom channels using a single standard two-conductor mic cable. It shall accept a dynamic or carbon mic headset. It shall have a mic on/off switch with a momentary position, a channel select switch, and a headphone volume control, all positioned for easy operation. The signalling option shall be provided by a separate module and a combined call lamp/pushbutton. A single screwdriver-actuated mode switch shall permit selection of Clear-Com or TW type operation. A screwdriver-adjust trimpot shall vary the sidetone from 35dB null to fully on. For reliable communications in any environment, the microphone preamp shall have a contoured response from 200Hz-12kHz and shall maintain nominal line level within 10dB over a 25dB input range. The circuitry shall be current limited and short-circuit proof, with integral reverse polarity protection. It shall be field serviceable and replaceable, with socketed ICs. The impedance isolator shall maintain a high impedance (±10kΩ) on the powered channel across the whole audio band with a minimal voltage drop (~6V), regardless of current consumption. It shall be compatible in operation with all Clear-Com and TW type systems and shall be called a CP-300.

CP-300 BLOCK DIAGRAM



# REMOTE STATION



## RS-201 BELT-PACK

### FEATURES

- Two channels plus program input
- Separate intercom and program volume controls
- Easy interconnection
- Low current drain and high impedance bridging
- Operates with portable battery pack or Main Station/Power Supply
- Ultra-stable sidetone balance
- Mic limiter
- Functions as split-feed Talent Receiver in IFB (Program Interrupt) System with PIC-4 Program Controller
- Functions as split-feed Talent Receiver in IFB (Program Interrupt) System with PIC-4 Program Controller



### DESCRIPTION

The RS-201 is a broadcast-standard, two-channel remote station designed as a belt-pack. The unit is housed in a rugged, "no-glare" black aluminum chassis that attaches to the operator's belt with a sturdy spring clip.

The RS-201 allows talking/listening on two separate channels and program monitoring on another listen-only "channel." Separate volume controls and mic on/off switches allow the desired talk/listen set-up at the ideal audio level. The program and intercom signals are mixed together, and the RS-201 feeds the combined signal to a binaural headset. The operator hears a different intercom channel in each side of the headset. As an option, the RS-201 is available for use with a monaural headset (single-or double-muff style); audio signals are mixed together and fed to a 4-pin headset connector instead of a 6-pin.

When used in the standard binaural mode, the RS-201 works with a double-muff "stereo" headset that receives a different intercom channel in each earpiece (such as Clear-Com's DT-109/6 Binaural Headset by Beyer). Program is mixed with the intercom audio and heard in both ears.

The RS-201 is ideal for Clear-Com's Program Interrupt (IFB) System, when it is necessary for talent to monitor two separate

programs or hear continuous program in one ear and interrupted program with cues in the other ear ("split feed," requires connection to PIC-4 Program Controller).

The RS-201 includes recessed sidetone level controls, one for each intercom channel. This lets the operator vary the level of his/her own voice as heard in the headset, allowing up to 25 dB of acoustical pick-up.

The RS-201 features Clear-Com's excellent speech intelligibility in high- and low-noise environments. The program input is bridging, transformer-balanced, spanning a wide frequency response with extremely low distortion.

The RS-201 features automatic headset detection, which mutes the mic preamp when the headset is unplugged. Therefore background noise is not increased by an unused yet on-line belt-pack. Improved circuitry virtually eliminates all hum and noise pick-up from SCR dimmers, TV sync, and AC power sources. Clearly the ideal intercom for professionals, the RS-201 has an extended power supply range so it may be used in ENG/EFP applications where power is supplied by a 12-volt battery pack.

Low current drain and high impedance bridging allow up to 50 RS-201 belt-packs to be connected in a system with one Main Station/Power Supply. Audio and

continued



sidetone levels never fluctuate, even when other stations join or leave the system.

The RS-201 provides two 6-pin, XLR connectors for input and extension of the intercom channels and program. Shielded 3-pair cable is used to interconnect. Clear-Com offers an accessory device (Model EC-6) that lets you use standard mic cable to input all signals to the belt-pack.

#### ACCESSORIES

##### BP-10 BATTERY PACK

A portable, belt-worn power pack that operates two Remote Stations for over ten hours. Includes three 9V batteries, on/off switch, and termination switch. Provides 2' mic cable with 3-pin connector for output to remote station. Perfect for ENG, EFP, and other remote applications.

##### EC-6 DISTRIBUTION BOX

An interconnect device that lets you use standard mic cable for sending two channels plus program signal to RS-201. Accepts 3-pin inputs and provides a multi-pair cable with 6-pin connector for output to belt-pack.

##### IC-25/6 INTERCONNECT CABLE

Superflexible, 25-foot, 3-pair cable with 6-pin XLR connectors for input/extension of two intercom channels.

## SPECIFICATIONS ARCH/ENG SPECS

#### AMPLIFIERS

Solid state, integrated circuit amplifiers on a plug-in P.C. Board. Current limited and short circuit proof with reverse polarity protection.

#### MIC PREAMP

**Frequency Response:** 200Hz-12kHz with contoured response to enhance voice intelligibility.  
**Mic Input:** 200 $\Omega$  to 1k $\Omega$   
**Mic Preamplifier Gain:** 37dBv  
**Maximum Input Before Clipping:** -30dBv\*

#### HEADPHONE AMPLIFIER (Channel A and Channel B)

**Frequency Response:** 150Hz-18kHz ( $\pm 2$ dB)  
**Output Impedance Range:** 150-600 $\Omega$   
**Amplifier Output:**  $\pm 20$ dBm, 26 volts p-p at 600 $\Omega$   
**Distortion:** 0.1% THD at 1kHz  
**Headphone Amplifier Gain:** 38dB

#### PROGRAM INPUT

**Frequency Response:** 50Hz-18kHz  $\pm 1$ dB  
**Input Impedance:** 15k $\Omega$  bridging  
**Channel A:** Transformer Isolated  
**Level:** -8 dB for max output

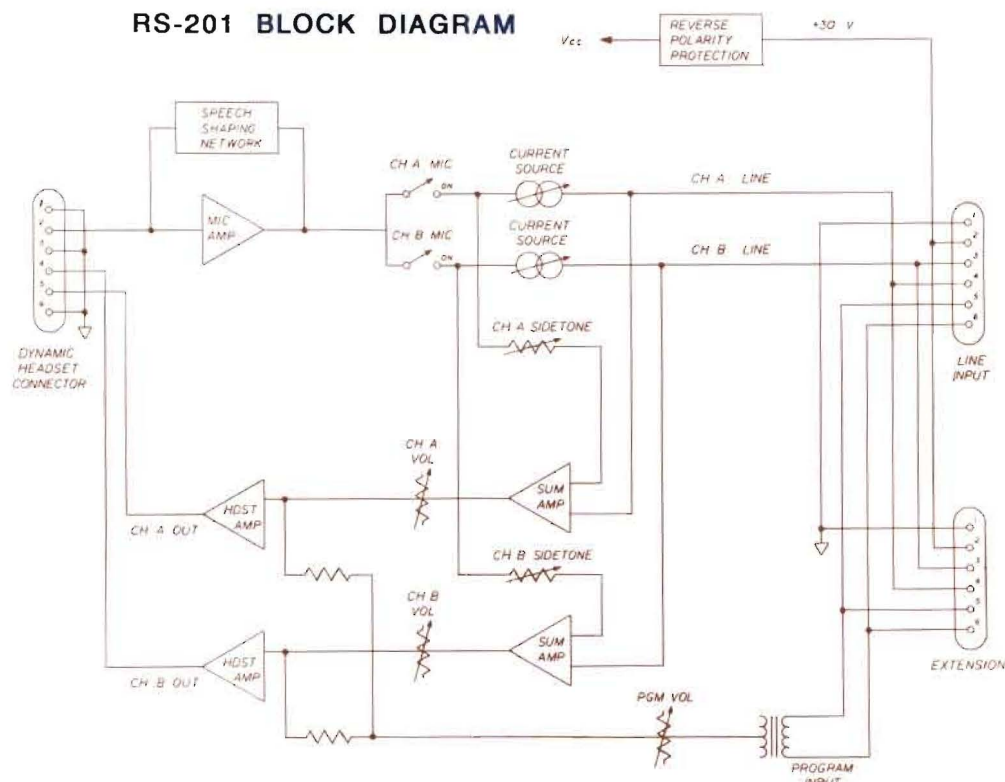
#### GENERAL

**Sidetone Adjustment:** 25dB null to full on, 2 channels  
**Signal-to-Noise:** 75dB  
**Equivalent Input Noise:** -118dB  
**Line Impedance:** 15k $\Omega$  bridging 200 $\Omega$   
**Line Level:** -15dBv nominal  
**Maximum Line Level:** -1dBv  
**Power Requirements:** 15 ma quiescent; 40 ma short circuit  
**Voltage Range:** 12-32 volts (28 volts nominal)  
**Dimensions:** 5 1/4" x 3 3/4" x 1 1/2"  
133mm x 95mm x 38mm

Specifications subject to change without notice  
\*0 dBv is referenced to 0.775 volts rms.

The remote intercom station shall be of the solid-state portable type. It shall accept two discrete intercom channels and one program channel (listen-only). It shall have an individual volume control for each intercom channel and a volume control for the program channel. It shall provide a separate mic ON/OFF toggle switch for each intercom channel. The remote station shall be supplied with a Switchcraft D6M connector for interconnect with the headset. Two 6-pin XLR connectors shall be provided for connecting the station to the system. The program shall be fed to both earpieces of the headset. Intercom Channel A shall be fed to the left earpiece and Channel B shall be fed to the right earpiece. The program input shall be fully balanced and transformer-isolated. The program input shall be 15k $\Omega$  bridging. Intercom Channels A and B shall be 15k $\Omega$  bridging. The intercom station electronics shall consist of a mic preamplifier, two power amplifiers, and a program amplifier. It shall be current-limited and short circuit-protected and shall have reverse polarity protection. It shall be field-serviceable and replaceable. The station shall contain two separately adjustable sidetone circuits. The intercom bridging impedance shall be greater than 15k $\Omega$ , over a frequency response of 10kHz. The bridging circuit shall use no transformers. The program input shall have a frequency response of 50Hz-18kHz with a THD of less than 0.1%. The intercom shall have an overall response of 200Hz-12kHz, contoured to enhance vocal intelligibility. The mic preamplifier shall accept a dynamic mic of nominal 200 $\Omega$  impedance at a -50dB level. The signal-to-noise shall be a minimum of 75dB. The remote station shall operate from a power source of 12-32 volts and shall draw no more than 15 ma. The station shall be constructed of .062" aluminum, with a .090" aluminum cover. The remote station shall have a three-inch stainless-steel belt clip. The dimensions shall not exceed 5 1/4" by 3 3/4" by 1 1/2". The weight shall be 1 1/4 pounds. It shall be called a Clear-Com RS-201.

### RS-201 BLOCK DIAGRAM



# R E M O T E      S T A T I O N



## MR-102A HEADSET STATION

### F E A T U R E S

- Two channels, selectable
- Headset volume control
- Ultra-stable sidetone control
- Visual Call Signalling
- Low current drain & high impedance bridging
- Easy to install & interconnect



### D E S C R I P T I O N

The MR-102A is a two-channel headset station that allows selectable communicating in a Clear-Com System. It features excellent speech intelligibility under high- or low-noise conditions.

The MR-102A drives a standard Clear-Com headset to levels greater than 110 dB SPL, and can support two dynamic headsets if connected with a suitable Y-cord. A recessed sidetone control is included in the front panel. It enables the operator to adjust his/her own voice level as heard in the headset. Sidetone level needs to be set just once, if at all, even if other stations join or leave the intercom line.

The station features Visual Call Signalling to attract the attention of operators who have removed their headsets or turned off their speakers.

The MR-102A is mounted on a charcoal-brown, brushed aluminum panel that installs in a standard two-gang outlet box. Only 1-3/4" depth is needed for installation.

The MR-102A connects to the intercom system with standard shielded mic cable (wire run in conduit is also suitable). It provides a clearly-labelled, 5-pin terminal strip for intercom/power input. Bidirectional current

sourcing, high impedance bridging, and low current drain allow as many as 100 MR-102A stations to be connected over one mile of cable, with one Clear-Com Main Station or Power Supply supporting the system. The circuit design virtually eliminates all hum and noise pick-up from SCR dimmer and AC power sources.



## SPECIFICATIONS

### AMPLIFIER DESIGN

Solid state, integrated circuit amplifiers which include a mic preamp, headset/speaker power amplifier and signalling circuitry. Current limited with short circuit and reverse polarity protection.

### MIC PREAMPLIFIER

**Frequency Response:** 250-12kHz with contoured response to enhance voice intelligibility.

**Mic Input:** 200 $\Omega$

**Mic Preamp Gain:** 37dB

**Max Input Before Clipping:** -34dBv\*

### HEADPHONE AMPLIFIER

**Frequency Response:** 150-18kHz  $\pm$  2dB

**Load Impedance Range:** 300-2000 $\Omega$

**Output Level:**  $\pm$ 20dBm, 26 volts p-p @600 $\Omega$

**Headset Level:**  $\pm$ 110dB with standard Clear-Com headsets

**Distortion:** 0.2% THD at 1kHz

**Headphone Amp Gain:** 38dB

### CONNECTORS

**Dynamic Headset:** Male D4M, Switchcraft type

**Line:** 5 screw terminal block

### GENERAL

**Line Level:** -15dBv max.\*

**Side Tone Adjustment:** 35dB null to full on

**Signalling Voltage:** 11 volts DC on audio line

**Call Light Sensitivity:** 4 volts

**Signal-to-Noise:** 75dBv\*

**Equivalent Input Noise:** 121dBv\*

**Station Bridging Impedance:** 20 k $\Omega$  (200-10kHz)

**Voltage Range:** 12-32 volts, 28 volts nominal.

**Power Requirements:** 10 ma quiescent, 15 ma talk, 55 ma signalling.

**Dimensions:** Size: 4.5" (11.3cm) square; 1.75"

(4.38cm) deep. Weight: 7.25 oz (21kg)

Specifications subject to change without notice

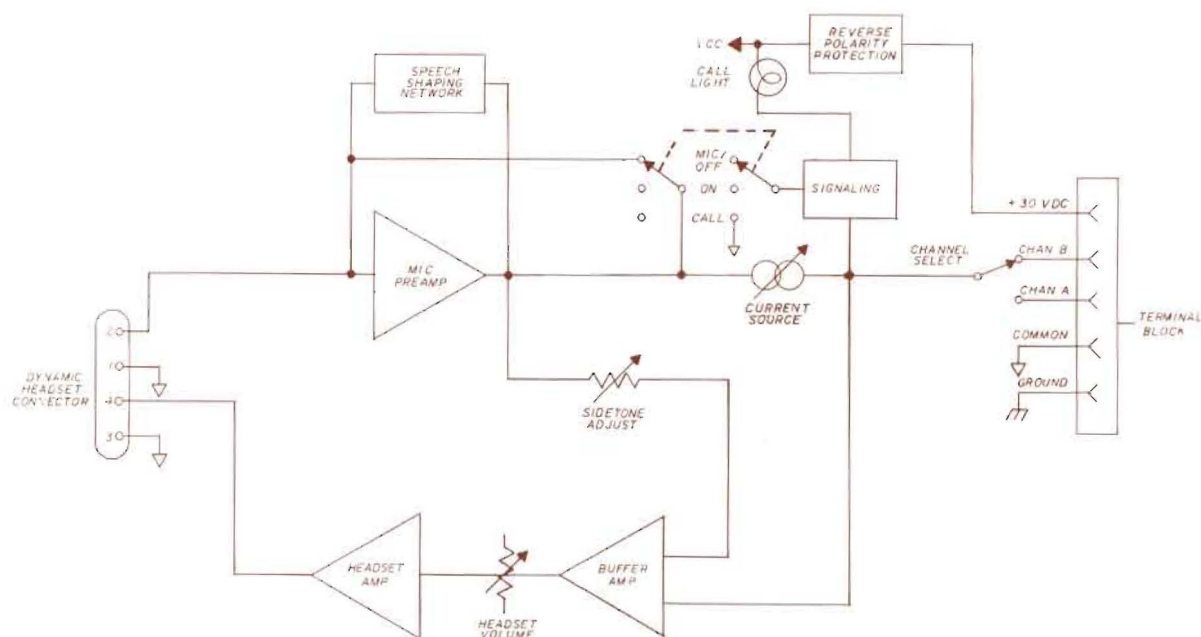
\*0 dBv is referenced to 0.775 volts rms.

## ARCH/ENG SPECS

The intercom station shall be a wall-mount unit that allows two-way selectable communication on two channels. It shall have all the necessary controls and connectors to interface with a standard Clear-Com System. The intercom shall be mounted on a charcoal brown aluminum panel and shall fit in a standard two-gang outlet box, measuring no more than 1.75" in depth. The station shall provide a channel-select switch on the front panel. It shall have a volume control and an adjustable sidetone circuit. The station shall also incorporate a combination Mic On/Off and "call" switch on the front panel. An amber lamp for identifying call signals shall also be provided. The station shall include a four-pin male XLR-type connector for use with a dynamic headset. It shall provide screw terminals on the rear panel to allow individual signals and power to be brought to the intercom station. The station's electronics shall consist of a mic preamplifier with limiter, power amplifier, and signalling circuit. It shall be current limited and short-circuit-protected, and shall have reverse polarity protection. It shall be field-serviceable and replaceable. The station's preamplifier shall automatically shut off when the station's headset is disconnected. The preamplifier shall have an overall response of 250Hz to 12kHz. The mic preamplifier shall accept a dynamic mic of nominal 200 $\Omega$  impedance at a -55dB level. The power amplifier shall be capable of driving 300-2000 $\Omega$  headsets to a level of +20dBm with less than 0.2% THD. The station bridging impedance shall be greater than 15k $\Omega$  over a frequency response of 200Hz to 10kHz. The headphone amplifier's frequency response shall be 150Hz to 18kHz,  $\pm$ 2dB. The signal-to-noise ratio shall be a minimum of 75dB with an equivalent input noise of -121dB. Power supply RF EMI rejection shall be greater than 60dB referenced to the audio line. The station shall operate from a power source of 12-32 volts DC

and shall draw no more than 10 ma quiescent. The dimensions shall not exceed 4.5" square by 1.75" deep, and it shall weigh no more than 7.25 oz. It shall be called a Clear-Com MR-102A.

## MR-102A BLOCK DIAGRAM



# M A I N   S T A T I O N



## CS-210 TWO-CHANNEL MAIN STATION

### F E A T U R E S

- Supports up to 60 Remote Stations on 2 channels
- Accepts mic-level or line-level Program input
- Program assignable to either or both channels
- Visual Call Signalling
- Stage Announce to external systems
- Separate intercom, program, and sidetone level controls
- Mic limiter
- Circuit-breaker-protected with short circuit indicator and re-set button
- Switch-selectable operation from 115 VAC or 230 VAC mains
- Lightweight, weather-proof, portable enclosure



## D E S C R I P T I O N

The CS-210 is a portable main station with a regulated power supply and a versatile monitoring system. It features Clear-Com's excellent speech intelligibility in high- and low-noise environments.

The CS-210 contains a mic preamp with limiter and drives a standard Clear-Com headset to levels greater than 110 dB SPL.

### MONITORING SYSTEM

The CS-210 supports two channels containing as many as 60 remote headset stations or 12 speaker stations. The operator monitors the intercom activity on the channels with locking "Monitor Select" buttons. These buttons light dimly when engaged. Either channel may be accessed (monitored) separately or both simultaneously (without the two being tied together).

For paging applications, the CS-210 provides a balanced, line-level output signal to a "Stage Announce" connector on the rear panel. The front panel button labelled "S/A" activates the output, giving the operator access to an external speaker/amp system.

### SIGNALLING

Visual Signalling attracts the attention of operators who've removed their headsets or turned off their speakers. The CS-210 Call button signals all stations on the channel(s) that have been previously chosen with the Monitor Select buttons. For instance, if the Channel A Select button is engaged, pressing the

Call button signals all stations using Channel A.

When a remote station operator sends a Call signal, the Monitor Select button (on the CS-210) associated with that station's channel will light brightly, whether in the "on" or "off" position. The Visual Signal Circuit is also used to activate the optional remote page feature at other stations.

### SIDETONE

Sidetone control allows the operator to vary the level of his/her own voice as heard in the headset; it also suppresses acoustic feedback when using an external speaker. The CS-210 provides a sidetone adjustment for the station operator, who need not readjust it, even when other stations join or leave the system.

### PROGRAM INPUT

The CS-210 accepts a balanced, mic- or line-level program input for monitoring in the station's headset or for mixing with the intercom audio on either or both channels. The CS-210 provides a single program volume control for intercom line headset level.

### POWER SUPPLY PROTECTION

The CS-210 provides a red LED to indicate a short circuit in the system, and a circuit-breaker re-set button that enables instant operation once the short is removed. The station's power supply is regulated, current-limited, and provides 30 volts DC,

*continued*



using a 115V or 230V AC mains supply. The CS-210 also provides audio termination for each channel.

### EASY INTERCONNECTION

The CS-210 connects to the remote stations with standard two-conductor mic cable. The station's rear panel provides three 3-pin, male XLR connectors for the output of Channel A and three for Channel B (six connectors total).

### ACCESSORY

Part # 820020 CS-210 Rack-ear Kit converts CS-210 to rack-mounting intercom; fits in standard 19" equipment racks.

## SPECIFICATIONS

**Amplifier Design:** Solid state IC. Current limited and short circuit protected

#### MICROPHONE PREAMP

**Input:** Low impedance (~1k $\Omega$ ) for 200 $\Omega$  nominal dynamic elements

**Input Level:** -55dBv nominal, -19dBv maximum before clipping\*

**Nominal Gain:** +37dB

**Limiter Compression Range:** 25dB

**Frequency Response:** 250Hz-12kHz with a contoured response to enhance voice intelligibility

#### HEADPHONE AMPLIFIER

Drives any load of at least 150 $\Omega$  to full output (+20dBv)

**Distortion:** <.2% THD at 1kHz

**Gain:** (from intercom line) +37dB max

**Frequency Response:** 150Hz-18kHz  $\pm$ 2dB

#### PROGRAM AMPLIFIER

**Gain, Input to Intercom Line, Max:** +54dB (mic) -1dB (line) (the gain to headset output is a maximum of 37dB more than to intercom line)

**Input Impedance:** 3.6k balanced (mic) 300k balanced (line)

**Input Level:** Nominal: -75dBv (mic) -15dBv (line) max before clipping, volume full on: -52dBv (mic) +3dBv (line)\*

**Frequency Response:** 150Hz-18kHz

#### POWER SUPPLY

**Output Voltage:** 30VDC, regulated

**Output Current:** 1 amp maximum, circuit breaker protected

**Channel Separation:** >50dB

**Signal to Noise:** >55dB

#### OPERATING CONDITIONS

**Channel Monitoring:** Pushbutton-selectable A, B or both

**Call Circuitry:** Receives a signal from remote stations whether or not channel is monitored. The Call button sends a signal to remotes only on the channel(s) being monitored

**System Impedance:** 200 $\Omega$ , internally terminated (jumper removable)

**System Level:** -15dBv nominal, 0dBv before clipping\*

**Call Light Sensitivity:** 4V max

**Call Voltage:** 11V min

**Stage Announce:** Balanced, line level (~0dBv\*) transformer-isolated 600 $\Omega$  output from mic preamp

#### CONNECTIONS

**Headset:** Two XLR 4-pin male connectors (one has mic on/off switch)

**Channel Outputs:** Three XLR 3-pin male connectors for each channel

**S/A:** XLR 3-pin male

**Program Input:** XLR 3-pin female

**External Speaker:** 1/4" mono phone jack

**Power Requirements:** 105-125 or 210-250 VAC, 50-60Hz, switch selectable from rear panel; 60 watts maximum

**Dimensions:** 3 1/2" Height x 9 11/16" Width x 11 11/16" Depth (front to back)  
89mmH x 254mmW x 305mmD

**Environmental:** Operating temperature range 0-50°C (32-122°F)

Specifications subject to change without notice

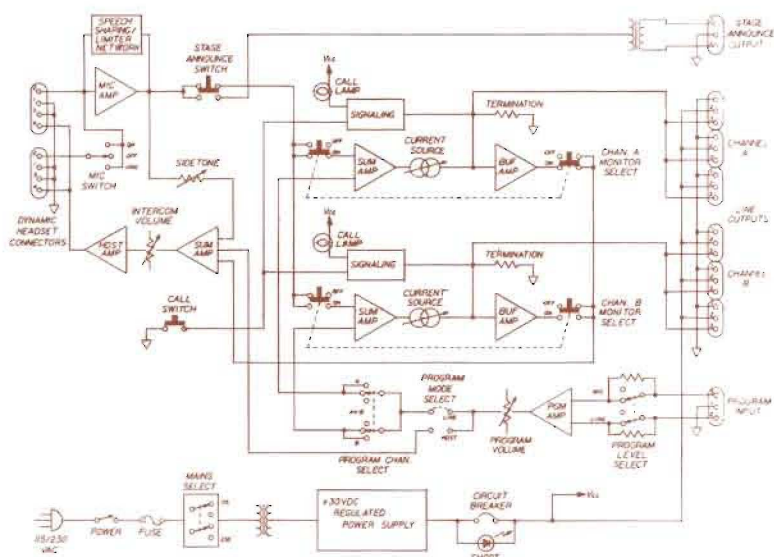
\*0 dBv is referenced to 0.775 volts rms.

## ARCH/ENG SPECS

The main station shall be a 2-channel portable intercom station. It shall have an internal power supply with an output of 30 VDC, regulated, and a current capacity of 1 ampere, maximum. The power supply shall be short circuit protected, with an LED short indicator and circuit breaker reset button on the front panel. The LED shall glow when the circuit breaker trips in response to a short. Clearing the short shall cause the LED to go out and permit normal operation as soon as the reset button is pushed. The power supply shall operate on an AC line voltage of 105-125 or 210-250 VAC, 50-60Hz, switch-selectable from the rear panel. It shall consume no more than 60 watts, and shall provide power for up to 60 headset or 12 speaker stations. The rear panel shall have a fuse for the primary circuit. The station shall have two lighted pushbutton channel monitor switches. These will permit selection of either or both (simultaneously) the channels (A and B) for two-way communications with the main station. Stations on one channel shall remain isolated from the other channel even when the operator is communicating with both channels. The electronics shall be solid state plug-in printed circuit board type with socketed ICs, for ease in field service and replacement. The intercom microphone preamp shall be accessible from either of the two front panel headset connectors (one of which is switched). It shall shut off automatically when no headsets are plugged in. It shall accept a 200 $\Omega$  dynamic type microphone with a nominal level of -55dBv and a gain to intercom line of +37dB. The limiter circuit shall maintain a level of approximately -20 to -10dBv on the intercom line from a mic level of -55 to -30dBv. The preamp's frequency response shall be 250Hz to 12kHz, contoured for enhanced intelligibility. It shall be able to drive both intercom lines to 0dBv before

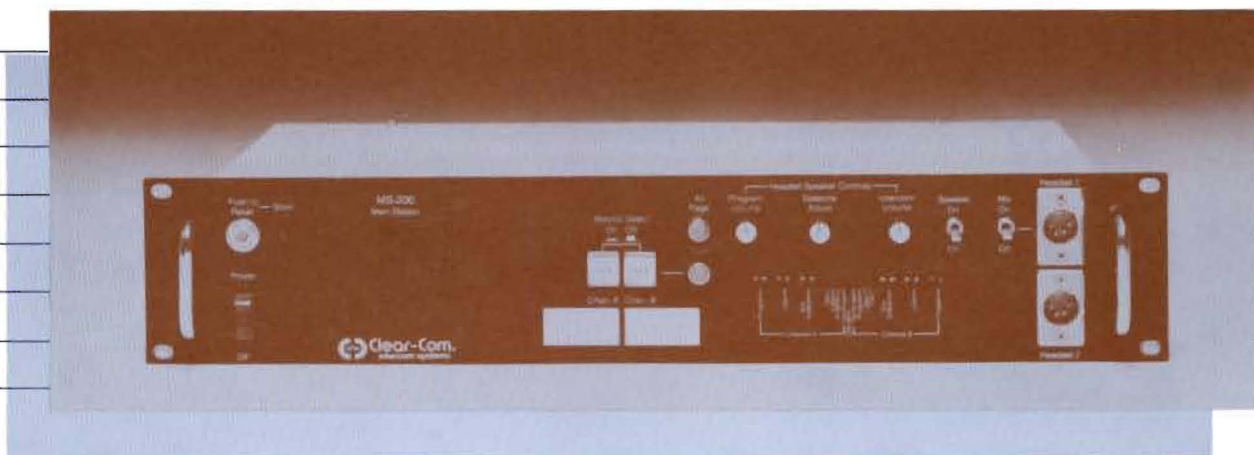
clipping. The program preamp's gain shall be switch-selectable from the rear panel for either mic level (-75dBv nominal) or line level (-15dBv nominal). The input shall be balanced (may be operated single-ended) 300k $\Omega$  in line position, 3-6k $\Omega$  in mic position. Its response shall be 150Hz-18kHz. Internal jumpers shall determine whether the program signal is fed to the intercom line(s) or fed directly to the station's headset(s). A single front panel volume control shall set the program level to either. A rear panel switch shall route the program to either or both of the intercom lines when the jumpers are set to feed program to the intercom lines. The intercom line circuits shall be of the high-impedance bridging type, with individual sidetone null controls. The intercom line terminations shall be jumper-removeable, thus allowing operation as a remote station. The headset amplifier shall be short circuit protected and capable of driving any headset(s) of 150 to 2k $\Omega$  impedance (combined) to the maximum output of +20dBv before clipping. A front panel control shall adjust the overall intercom level in the station's headsets; the maximum gain from line to headset shall be +37dB. A separate front panel adjustment shall allow the operator to add the desired amount of sidetone to the station's headsets without affecting the null of the individual channels. The amplifier's frequency response shall be 150Hz-18kHz  $\pm$ 2dB, and THD at 1kHz shall be less than .2%. For paging applications, a balanced line level (~0dBv) signal from the intercom mic preamp shall be applied to a rear panel 3-pin male XLR connector when the front panel S/A switch is pressed. This switch shall also normally interrupt the mic feed to the intercom channels (defeatable by addition of an internal jumper). The integral lamps in the monitor buttons shall glow dimly to indicate monitoring of that channel, or brightly to indicate a call to/from a remote station. A call signal shall be received from a remote station regardless of whether that channel's monitor button is engaged, but the main station's call button shall send a call signal only to the channel(s) being monitored. The rear panel shall also have three XLR 3-pin male connectors for each channel and a 3-pin female XLR type for the program input. Its dimensions shall not exceed 3.50" height (excluding feet and strap), 9.68" width and 11.66" depth. It shall weigh no more than 8 lbs. It shall have all necessary controls and connectors for compatible operation with Clear-Com products, and shall be called a Clear-Com CS-210.

## CS-210 BLOCK DIAGRAM





# M A I N S T A T I O N



## MS-200 TWO-CHANNEL MAIN STATION

### F E A T U R E S

- Supports up to 100 Remote Stations
- Selectable, 2-channel monitoring system
- Programmable talk/listen functions for each channel
- Functions include Visual Signalling and "All Page"
- Balanced program input, assignable to 1 or 2 channels
- Separate intercom, program, and sidetone level controls
- Built-in, wide frequency response speaker and external speaker jack
- Circuit-breaker-protected with short circuit indicator and re-set button
- Available with gooseneck mic, length-adjustable (1"-12")



### D E S C R I P T I O N

The MS-200 is a versatile main station with a regulated power supply and a programmable monitoring system. It features excellent speech intelligibility in high- and low-noise environments. The wide frequency response speaker delivers crisp sound pressure levels, high enough to be heard in the noisiest surroundings.

The MS-200 contains a mic preamp with a limiter and a four-watt power amp, so it can drive two dynamic headsets and the built-in speaker (or an external one). The station drives a standard Clear-Com headset to levels greater than 110 dB SPL.

#### MONITORING SYSTEM

The MS-200 supports two channels for as many as 100 remote headset stations or 20 speaker stations. The operator monitors the intercom activity on the channels with locking "Monitor Select" buttons. These buttons light dimly when engaged. The operator may monitor activity on both channels at the same time, without tying the channels together.

The MS-200 operator pre-sets the monitor functions for each channel. For instance, Channel A may be programmed for talk-only, Channel B for listen-only. The "All Page" button lets the operator address both channels at once (talk only).

### S I G N A L L I N G

Visual Signalling attracts the attention of operators who've removed their headsets or turned off their speakers. The MS-200 "call" button signals the stations on channels that have been previously chosen with the Monitor Select buttons. When a remote station sends a Call signal, the Monitor Select button associated with that station's channel will light brightly, whether in the "on" or "off" position. (The Visual Signal Circuit is also used to activate the optional remote page feature at other stations.)

#### SIDETONE

Sidetone control allows the operator to vary the level of his/her own voice as heard in the headset; it also suppresses acoustic feedback when using a speaker. The MS-200 provides one sidetone adjustment for each channel, and one for overall sidetone in the headset/speaker.

#### PROGRAM INPUT

The MS-200 accepts a balanced, line-level program input which is heard in the headset/speaker and can be mixed with the intercom audio on one or both channels. Program volume (as well as sidetone level) is individually set for each channel with trimpots located behind a removable plate on the MS-200 front panel (this plate also covers the talk/listen function switches and system termination switches).

*continued*



POWER SUPPLY PROTECTION

The MS-200 provides a red lamp to indicate a short circuit in the system, and a circuit-breaker re-set button that enables instant operation once the short is removed. The station's power supply is regulated, current-limited, and provides 28 volts at two amperes from a 115V or 230V AC mains supply. The MS-200 provides the necessary audio termination for the intercom system.

EASY INTERCONNECTION

The MS-200 connects to the remote stations with standard two-conductor mic cable. The station's rear panel provides six 3-pin, XLR connectors for intercom output, three connectors in parallel for Channel A and the same for Channel B.

GOOSENECK MIC OPTION

The MS-200 is available with a permanently-attached, noise-cancelling electret mic on a gooseneck with adjustable length (up to 12"). The mic is installed in the top headset connector. When the mic switch is set to momentary "on", the mic activates and the speaker is attenuated by 10 dB to reduce the possibility of feedback.

SPECIFICATIONS

**AMPLIFIER DESIGN:** IC amplifiers including solid state switching and signalling circuits. Current limited and short circuit protected.

**MICROPHONE PRE-AMP**

**Microphone Input:** 200 $\Omega$  nominal dynamic type  
**Mic Input Level:** -55dBv nominal\*  
**Mic Pre-Amp Frequency Response:** 250Hz-12kHz with a contoured response to enhance voice intelligibility  
**Headset Mic Input Level:** -15dBv max\*

**HEADPHONE AMPLIFIER**

**Output Impedance Range:** 8-2,000 $\Omega$   
**Output Level:** 4 watts into 8 $\Omega$   
**Distortion:** 0.5% THD at 1kHz  
**Amplifier Gain:** 35dB  
**Frequency Response:** 150-18kHz ( $\pm$  2dB)

**PROGRAM AMPLIFIER**

**Frequency Response:** 150-18,000Hz  
**Input:** 47-100k $\Omega$  balanced  
**Input Level:** -15dBv nominal; +10dBv max

**POWER SUPPLY**

**Output voltage:** 30 volts regulated, output circuit breaker protected  
**Output current:** 2 amps maximum

**CHANNEL SEPARATION:** <50dB

**SIGNAL TO NOISE:** 55dB

**SIDETONE:** Adjustable from 25dB null to full on

**CONTROLS BEHIND REMOVABLE FRONT PANEL COVER:**

- (2 of each; 1 for CH A and 1 for CH B)
- Listen Level Trim
- Program Level Trim
- Sidetone Balance
- Termination Switch
- Talk Switch
- Listen Switch
- Program Switch

**OPERATING CONDITIONS:**

**Channel Monitoring:** Programmable channels A and B with illuminated push on/push off switches  
**Call Light Send:** Follows monitor select switch.  
**Capacity:** Will support up to 100 Remote Headset Stations and 20 Remote Speaker Stations  
**System Impedance:** 200 $\Omega$  switchable  
**System Level:** -15dBv nominal; 0dBv before clipping

**SIGNALLING:**

**Call Light Sensitivity:** 4vdc max  
**Signalling Voltage:** 11vdc min

**CONNECTORS:**

**Headset Input Connector:** 2 4-pin connectors (D4M)  
**Output Connectors:** 6 (3 for each channel for loop-through convenience)  
**Auxiliary Input:** Switchcraft D3F  
**External Speaker Jack:** Disconnects internal speaker; 1/4" 3-conductor phone jack

**POWER REQUIREMENTS:** 115 or 230 volts AC 50-60Hz. 80 VA maximum

**DIMENSIONS:** 19"L x 3.5"H x 9"D  
483mmL x 89mmH x 229mmD

**ENVIRONMENTAL TEMPERATURE RANGE:** 0 -50 °C (32 - 122 °F)

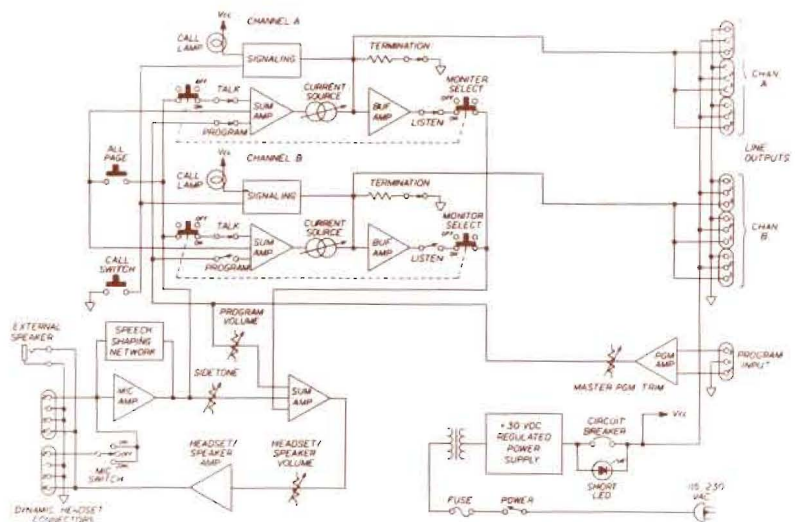
Specifications subject to change without notice  
\*0 dBv is referenced to 0.775 volts rms.

ARCH/ENG SPECS

The main station shall be a 2 channel rack mount intercom station. It shall incorporate a 30 volt regulated power supply capable of delivering 2 amps, circuit breaker-protected against external shorts, and have an LED indicator to indicate a shorted condition. It shall have two illuminating monitor select switches for monitoring either or both channels. The monitor select switches shall be programmable as to their talk and listen functions.

The program select switches and level trim controls shall be accessible from the front panel. These controls shall be protected by a removable cover plate. When monitoring both channels the operator shall be able to communicate with both channels simultaneously without combining the channels into a common or partyline system. It shall have a built-in speaker and a jack for connecting an external speaker. It shall have provisions for accepting a balanced line level auxiliary input signal which shall be selectable to either intercom channel. It shall also have a front panel control for adjusting the program level in the headset. It shall supply the terminating network for each channel. It shall have provisions for connecting two headsets to the station and a level control to adjust the volume to the headphones. It shall also have a front panel sidetone adjustment. The remote stations shall have the ability to visually signal the main station by illuminating the appropriate monitor select switch. The rear panel shall contain three XLR-type, 3-pin connectors for channel A and the same for channel B. The electronics shall be solid-state, IC, plug-in printed circuit amplifier modules. It shall be field serviceable and replaceable. The station shall accept a 200 $\Omega$  dynamic microphone with a nominal level of -55dBv. The station frequency response shall be 250Hz-12kHz. It shall be capable of driving the line of either channel to a maximum level of 0dBv. The headphone amplifier shall be able to operate a headset with an impedance of 8 to 2000 $\Omega$  and shall be capable of delivering an output level of 20dBm at 600 $\Omega$ . The distortion shall be less than 0.5% THD at 2kHz. The station shall also incorporate a mic on/off switch on the front panel. The mic preamp shall automatically shut off when the headset is disconnected from the station. The station shall have the capacity to power 100 Headset Stations or 20 Speaker Stations. The auxiliary input shall have a frequency response of 150-18kHz ( $\pm$ 2dB). The power supply shall operate from 105-125 VAC or 210-260 VAC; 50-60Hz, with maximum power consumption of 80 VA. Its dimensions shall be no greater than 19" x 3.5" x 9" deep. It shall be called an MS-200.

MS-200 BLOCK DIAGRAM





# R E M O T E   S T A T I O N



## RM-120A TWO-CHANNEL SPEAKER STATION

### F E A T U R E S

- Allows selectable two-channel communicating
- Uses just one unit of rack space
- Wide frequency response speaker with on/off switch
- Intercom volume control
- Balanced program input with volume control
- Operates with carbon or dynamic headsets
- Mic on/off switch and adjustable sidetone
- Visual Call Signalling
- External speaker jack
- Mic limiter
- Available with optional gooseneck mic



### D E S C R I P T I O N

The RM-120A is a broadcast-standard, remote speaker station that allows selectable talking and/or listening in a Clear-Com System. The operator communicates on one channel or on both at once.

Compatible with all Clear-Com intercoms, the RM-120A features excellent speech intelligibility in high-and low-noise environments. The wide frequency response speaker delivers crisp sound pressure levels, high enough to be heard in the noisiest surroundings.

The RM-120A operates with a carbon headset or a dynamic headset/telephone-style handset. It drives a standard Clear-Com headset to levels greater than 110 dB SPL, and can support two dynamic headsets and an external speaker. The RM-120A's speaker can be turned off when private conversation via the headset is desired; alternately, a mic on/off switch is provided to let the RM-120A function as a "listen-only" or remote page station.

The RM-120A features automatic headset detection, which mutes the mic preamp when the headset is not plugged in. Therefore background noise is not increased by an unused yet on-line station.

The RM-120A accepts a balanced Program input for monitoring external audio in the headset or speaker. The station mixes the Program with the intercom audio, and provides a Program level adjustment.

The RM-120A contains a sidetone control that allows the operator to vary the level of

his/her own voice as heard in the headset/speaker. Sidetone control also suppresses acoustic feedback when using the speaker.

The RM-120A features Visual Call Signalling to attract the attention of operators who've removed their headsets or turned off their speakers. The station's Call button activates the signal circuit at all other stations using the same channel(s) as the RM-120A. For receiving Call signals, the RM-120A provides two amber lamps (one per channel) that illuminate when another operator activates the signal on the associated channel. The Visual Signal circuit also activates the optional remote control at other stations.

"Stage Announce" is another RM-120A feature, useful for paging applications. The station provides a balanced, line-level output signal to a rear panel "Stage Announce" connector. A front panel button labelled "S/A" activates the output, giving the operator access to an external speaker/amp system.

The RM-120A installs in a standard 19" equipment rack, using only 1.75" vertically. Standard mic cable connects the RM-120A to the intercom system; wire run in conduit is also suitable. The station provides two 3-pin, XLR connectors for input and loop-through extension of Channel A, and the same for Channel B (four connectors total).

Bidirectional current sourcing and low current drain allow as many as 20 RM-120A stations (powered by the suitable Main

continued



### GOOSENECK MIC OPTION

The RM-120A is available with a permanently-attached, noise-cancelling electret mic on a gooseneck with adjustable length (up to 12"). When the mic toggle switch is set to momentary ("on"), the mic activates and the speaker is attenuated by 10 dB to reduce the possibility of feedback.

## SPECIFICATIONS

### AMPLIFIER DESIGN:

Solid-state, integrated circuit amplifiers which include a mic preamp with limiter, headset/speaker power amp, signalling circuitry. Current-limited with short circuit and reverse polarity protection.

### MIC PREAMPLIFIER

**Frequency Response:** 250Hz-12kHz with contoured response to enhance speech intelligibility  
**Mic Input:** 200Ω  
**Mic Preamp Gain:** 37dB  
**Max Input Before Clipping:** -34dBV\*

### HEADSET/SPEAKER AMPLIFIER

**Frequency Response:** 100Hz-18kHz,  $\pm 2$ dB  
**Load Impedance Range:** 300-2000 $\Omega$  (dynamic headset)  
**Output Level:** +20dBm, 26V p-p at 100 $\Omega$   
**Headset Level:** +110dB SPL with standard Clear-Com headset  
**Speaker Level:** +98dB SPL at 3 feet  
**Speaker Type:** 16 $\Omega$  3" x 1.5" oval  
**Power Output:** 2.5w into 16 $\Omega$   
**Distortion:** 0.5% THD at 1kHz  
**Headphone Amp Gain:** 38dB

## GENERAL SPECS

Line Level: 0dbv max, -15dBv nominal\*  
Sidetone Adjust: 35dB null to full on  
Signal Voltage: 11v DC on audio line  
Call Light Sensitivity: 4 volts  
Signal-to-Noise: 75dB  
Equivalent Input Noise: -118dB  
Station Bridging Impedance: 12k $\Omega$  (200Hz-10kHz)  
Voltage Range: 12-32 volts, 28v nominal  
Power Required: 25 ma quiescent, 60 ma talk, 60 ma signalling, 200 ma short circuit  
Dimensions: 19" x 1.75" x 6.5" deep:  
483mm x 44mm x 165mm

## CONNECTORS

**CONNECTORS**  
**Dynamic Headset:** Male D4M, Switchcraft type (2)  
**Carbon Headset:** 1/4" phone jack (ring/tip/sleeve)  
**Line:** Male D3M (2), Female D3F (2)  
**Program:** Female D3F (1)  
**External Speaker:** 1/4" phone jack (ring/tip/sleeve)  
 (disconnects internal speaker)

Specifications subject to change without notice  
\*0 dBV is referenced to 0.775 volts rms.

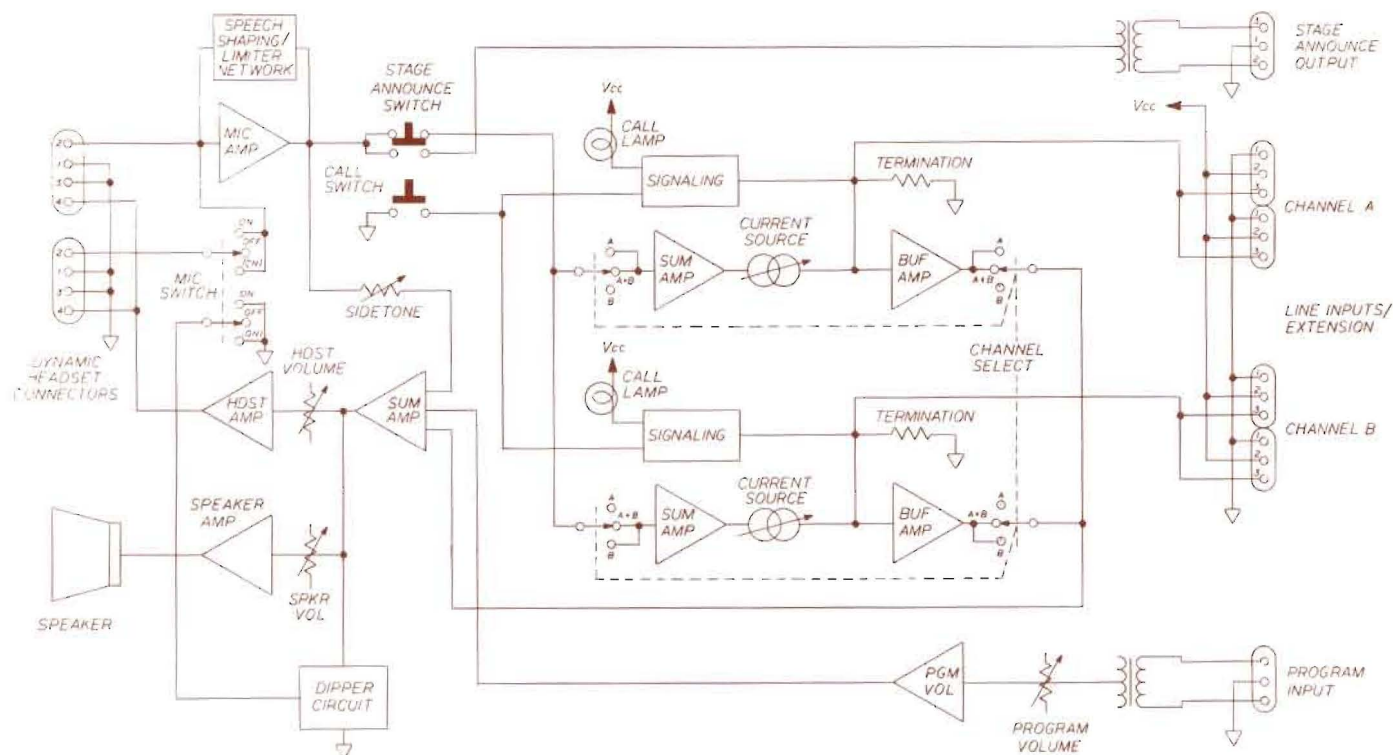
## ARCH/ENG SPECS

The intercom shall be a 2-channel speaker station designed to mount in 1.75" rack space. The station shall have all the necessary controls and connectors to interface to a standard Clear-Com System. It shall accept two discrete intercom channels as well as a balanced line-level program signal that is fed to the speaker and headset. The station shall have volume control for overall intercom level and a volume control for the program. The front panel shall provide two 4-pin, XLR-type male connectors for use with dynamic headsets/handsets, plus a .25" jack for use with a carbon headset. It shall provide a speaker on/off switch. It shall provide a mic on/off momentary on switch, associated with headset connector #1. The station shall be supplied with one input and one extension connector for each intercom channel (4 connectors total; 3-pin, XLR-type) and an auxiliary connector (3-pin, XLR-type female) for the program input. The program input shall be 50k $\Omega$  bridging, and shall have a THD of less than 0.5% at 1kHz. Its electronics shall consist of a mic preamplifier with limiter, a 4 watt power amplifier, and a program amplifier. It shall be current-limited and short-circuit-protected and shall have reverse polarity protection. The station shall contain an adjustable sidetone circuit and visual signal circuitry. The intercom bridging impedance shall be greater than 12k $\Omega$ , over a

frequency response of 200Hz to 10kHz. The bridging circuit shall use no transformers. The intercom shall have an overall response of 250Hz-12kHz. The mic preamplifier shall accept input from one or two dynamic mics, each of nominal 200 $\Omega$  impedance at a -55dB level. The signal-to-noise ratio shall be a minimum of 75dB. The station shall operate from a power source of 12-32 volts DC and shall draw no more than 25 ma quiescent. Its dimensions shall not exceed 19" wide by 1.75" high (front panel) by 6.5" deep. It shall be called a Clear-Com RM-120.

The station shall be made available with an electret mic, permanently attached to dynamic headset connector #1 with a field-adjustable gooseneck extension. When this mic is turned on, the station's speaker shall be attenuated by 10dB to reduce the possibility of feedback. The station shall be called a Clear-Com RM-120GM.

## RM-120A BLOCK DIAGRAM





# M A I N S T A T I O N



## MS-400 FOUR-CHANNEL MAIN INTERCOM STATION

### F E A T U R E S

- Regulated power supply supports up to 100 Remote Stations
- Selectable, 4-channel monitoring system
- Programmable talk/listen functions for each channel
- Wide frequency response speaker with speaker on/off switch
- Visual signalling
- Balanced program input, assignable to any or all channels
- Separate intercom, program, and sidetone level controls
- External speaker jack
- Circuit-breaker-protected with short circuit indicator and re-set button
- Available with gooseneck mic, length-adjustable (1"-12")



## D E S C R I P T I O N

The MS-400 is a four-channel main intercom station with a regulated power supply and a versatile channel-monitoring system. It features Clear-Com's excellent speech intelligibility and consistent high performance.

The MS-400 contains a mic preamp and a four-watt power amp, so it can drive two dynamic headsets and the built-in speaker or an external speaker. The station drives a standard Clear-Com headset to levels greater than 110 dB SPL. The built-in speaker outputs crisp sound pressure levels, high enough to be heard in the noisiest surroundings.

### MONITORING SYSTEM

The MS-400 supports four channels used by as many as 100 remote headset stations or 20 speaker stations. The main station operator monitors the intercom activity on the channels with locking "Monitor Select" buttons. These buttons light dimly when engaged. One, two, three, or all four channels can be monitored simultaneously without tying the channels together.

The MS-400 operator pre-sets the monitor functions for each channel. For instance, Channel A may be programmed for talk-only, Channel B for listen-only, and Channels C and D for talk and listen. "Channel Override" buttons momentarily cancel the pre-sets when the operator needs two-way communicating.

Sidetone controls (the MS-400 provides one for each channel, and

one for overall headset/speaker sidetone) allow the operator to vary the level of his/her own voice as heard in the headset/speaker. Sidetone control also suppresses acoustic feedback when using a speaker.

### SIGNALLING

Visual Signalling attracts the attention of operators who've removed their headsets or turned off their speakers. The MS-400 Call button signals the stations on channels that have been previously chosen with the Monitor Select buttons. When a remote station sends a Call signal, the Monitor Select button associated with that station's channel will light brightly, whether in the "on" or "off" position. (The Visual Signal Circuit is also used to activate the optional remote page feature at other stations.)

### PROGRAM INPUT

The MS-400 accepts a balanced, line-level program input which is heard in the headset/speaker and can be mixed with the intercom audio on any or all channels. Program volume is set individually for each channel with trimpots located beneath the top cover of the station.

### POWER SUPPLY PROTECTION

The MS-400 provides a red lamp to indicate a short circuit in the system, and a circuit-breaker re-set button that enables instant operation once the short is

*continued*



## EASY INTERCONNECTION

The MS-400 connects to the remote stations with standard two-conductor mic cable. The station's rear panel provides three 3-pin, XLR connectors for the output of each channel (twelve connectors total).

### GOOSENECK MIC OPTION

The MS-400 is available with a permanently-attached, noise-cancelling electret mic on a gooseneck with adjustable length (up to 12"). The mic is installed in the top headset connector. When the mic switch is set to momentary "on", the mic activates and the speaker is attenuated by 10 dB to reduce the possibility of feedback.

## SPECIFICATIONS

**AMPLIFIER DESIGN:** IC amplifiers including solid state switching and signalling circuits. Current limited and short circuit protected

**MICROPHONE PRE-AMP:**

**MICROPHONE PRE-AMP:**  
**Microphone Input:** 2000 $\Omega$  nominal dynamic type  
**Maximum Input Before Clipping:** -20dBv\*  
**Mic Pre-Amp Frequency Response:** 250Hz-12kHz  
 with a contoured response to enhance voice  
 intelligibility  
**Headset Mic Input Level:** -55dB

#### HEADPHONE AMPLIFIER:

**Output Impedance Range:** 8-2,000 $\Omega$   
**Output Level:** 4 watts into 8 $\Omega$   
**Distortion:** <0.5% THD at 1kHz  
**Amplifier Gain:** 35dB  
**Frequency Response:** 150-18kHz ( $\pm$ )2dB

**PROGRAM AMPLIFIER:**

**Frequency Response:** 150-18,000Hz  
**Input:** 47k $\Omega$ -100k $\Omega$  balanced  
**Input Level:** -15dBv nominal; +10dBv max\*

**POWER SUPPLY:**

**Output voltage:** 30 volts circuit breaker protected, regulated  
**Output current:** 2 amps maximum

**CHANNEL SEPARATION:** >50dB

**SIGNAL TO NOISE: 55dB**

**SIDETONE:** Adjustable from 25dB null to full on

**OPERATING CONDITIONS:**  
**Channel Monitoring:** Programmable channels A, B, C, D with illuminated push on/push off switches  
**Channel Override:** Defeats programmed select switches

**All Page:** Talk to all 4 channels

**Capacity:** up to 100 Remote Headset Stations or 20 Remote Speaker Stations.

**System Termination:** 200 $\Omega$  impedance switchable on or off

**SIGNALLING:**

**Call Light Sensitivity:** 4vdc  
**Signalling Voltage:** 11vdc

### CONNECTORS:

**CONNECTORS:**  
**Headset Input Connector:** 2-4 pin connectors (D4M)  
**Output Connectors:** 12 (3 outputs per channel).  
**Auxiliary Input:** Switchcraft D3F  
**External Speaker Jack:** Disconnects internal speaker

**POWER REQUIREMENTS:** 115/230 volts 50-60 Hz.  
80 watts maximum.

**DIMENSIONS:** 19"L x 3.5"H x 9"D  
483mmL x 89mmH x 229mmD

**ENVIRONMENTAL TEMPERATURE RANGE:**  
0-50° C (32-122°F)

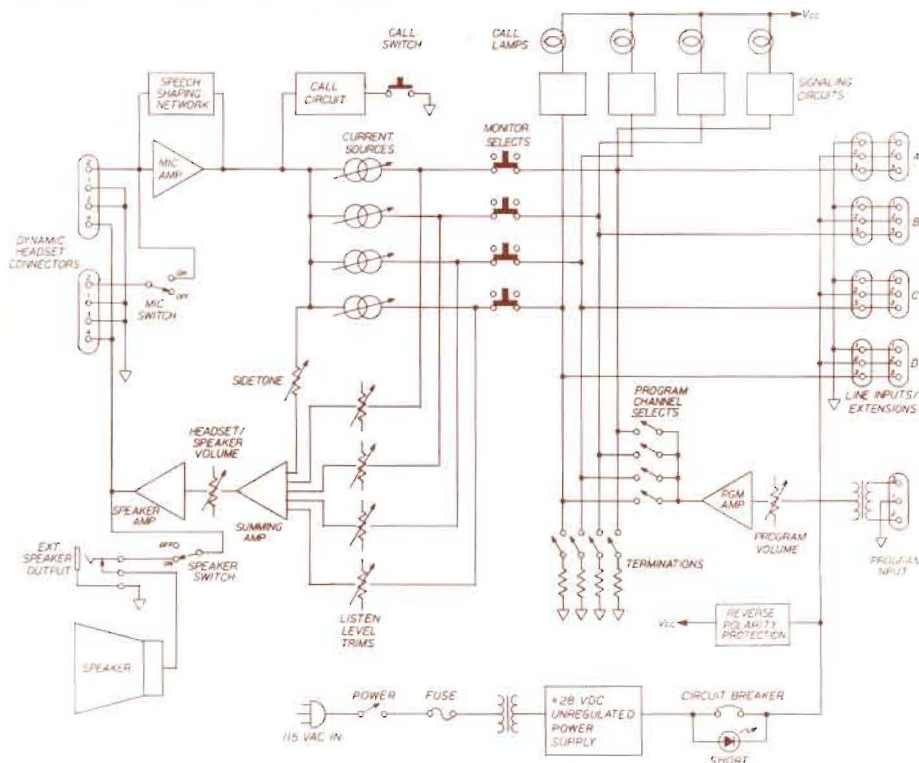
Specifications subject to change without notice  
\*0 dBu is referenced to 0.775 volts rms

## ARCH/ENG SPECS

The main station shall be a 4-channel rack-mount intercom station. It shall incorporate a 30 volt regulated power supply capable of delivering 2 amps, circuit-breaker protected against external shorts, and have an LED indicator to indicate a shorted condition. It shall have four illuminating monitor select switches for monitoring any or all channels. The talk and listen functions of the monitor select switches shall be programmable. The program select switches and level trim controls shall be accessible from the front panel. These controls shall be located behind a removable cover plate. When monitoring all channels the operator shall be able to communicate with them simultaneously without combining the channels into a common or partyline system. The station shall have a built-in speaker and a jack for connecting an external speaker. It shall have provisions for accepting a balanced line-level auxiliary input signal which shall be selectively assignable to any intercom channel. It shall also have a front panel control for adjusting the program

level in the headset/speaker. It shall supply the terminating network for each channel. It shall have provisions for connecting two dynamic headsets to the station, and a level control to adjust the volume to the headphones. It shall also have a front panel sidetone adjustment. The remote stations shall have the ability to visually signal the main station by illuminating the appropriate monitor select switch. The rear panel shall contain three XLR-type, 3-pin male connectors for the output of each channel. A-D. The electronics shall be solid-state, IC plug-in printed circuit amplifier modules. It shall be field-serviceable and replaceable. The station shall accept a 200Ω dynamic microphone with a nominal level of -55dB. The station's frequency response shall be 250Hz to 12kHz. It shall be capable of driving the line of any channel to a maximum level of 0dB. The headphone amplifier shall be able to operate a headset with an impedance of 300 to 2000Ω and shall be capable of delivering an output level of +20dBm at 600Ω. The distortion shall be less than 0.5% THD at 1kHz. The station shall also incorporate a mic on/off switch on the front panel. The mic preamp shall incorporate a limiter, and shall automatically shut off when the headset is disconnected from the station. The station shall have the capacity to power 100 headset stations or 20 speaker stations. The auxiliary input shall have a frequency response of 150-18k Hz ( $\pm 2$ dB). The power supply shall operate from 105-125 VAC or 210-260 VAC; 50-60Hz, with maximum power consumption of 80 watts. The station's dimensions shall be no greater than 19" x 3.5" x 9" deep. It shall be called an MS-400.

### MS-400 BLOCK DIAGRAM





# R E M O T E   S T A T I O N



## RM-400 FOUR-CHANNEL SPEAKER STATION

### F E A T U R E S

- Selectable, 4-channel monitoring system
- Programmable talk/listen functions for each channel
- Wide frequency response speaker with speaker on/off switch
- Visual Signalling
- Balanced program input, assignable to any or all channels
- Separate intercom, program, and sidetone level controls
- External speaker jack
- Available with gooseneck mic, length-adjustable (1"-12")



### D E S C R I P T I O N

The RM-400 is a four-channel remote speaker station with a versatile channel-monitoring system, featuring excellent speech intelligibility and consistent high performance.

The RM-400 contains a mic preamp and a four-watt power amp, so it can drive two dynamic headsets and the built-in speaker or an external speaker. The Station drives a standard Clear-Com headset to levels greater than 110 dB SPL. The built-in speaker outputs crisp sound pressure levels, high enough to be heard in the noisiest surroundings.

#### MONITORING SYSTEM

The RM-400 allows two-way communicating on four separate channels. The operator activates monitoring of the channels with locking "Monitor Select" buttons. These buttons light dimly when engaged. One, two, three, or all four channels can be monitored simultaneously without tying the channels together.

The RM-400 operator pre-sets the monitor functions for each channel. For instance, Channel A may be programmed for talk-only, Channel B for listen-only, and Channels C and D for talk and listen. "Channel Override" buttons momentarily cancel the pre-sets when the operator needs two-way communicating.

Sidetone controls (the RM-400 provides one for each channel, and one for overall headset/speaker sidetone) allow the operator to vary the level of his/her own voice

as heard in the headset/speaker. Sidetone control also suppresses acoustic feedback when using a speaker.

#### SIGNALLING

Visual Signalling attracts the attention of operators who've removed their headsets or turned off their speakers. The RM-400 Call button signals the stations on channels that have been previously chosen with the Monitor Select buttons. When a remote station sends a Call signal, the Monitor Select button associated with that station's channel will light brightly, whether in the "on" or "off" position. (The Visual Signal Circuit is also used to activate the optional remote page feature at other stations.)

#### PROGRAM INPUT

The RM-400 accepts a balanced, line-level program input which is heard in the headset/speaker and can be mixed with the intercom audio on any or all channels. Program volume is set individually for each channel with trimpots located beneath the top cover of the unit.

#### EASY INTERCONNECTION

The RM-400 connects to the intercom system with standard two-conductor mic cable. The station's rear panel provides four 3-pin, XLR connectors for intercom input, and four more for "loopthrough" extensions to other remote stations.

continued



### GOOSENECK MIC OPTION

The RM-400 is available with a permanently-attached, noise-cancelling electret mic on a gooseneck with adjustable length (up to 12"). The mic is installed in the top headset connector. When the mic switch is set to momentary "on", the mic activates and the speaker is attenuated by 10 dB to reduce the possibility of feedback.

## SPECIFICATIONS

**AMPLIFIER DESIGN:** IC amplifiers including solid state switching and signalling circuits. Current limited and short circuit protected.

#### MICROPHONE PRE-AMP:

Microphone Input: 200 $\Omega$  nominal dynamic type  
Maximum Input Before Clipping: -20dBv\*  
Mic Pre-Amp Frequency Response: 250Hz-12kHz with a contoured response to enhance voice intelligibility  
Headset Mic Input Level: -55dBv nominal -15dBv max\*

#### HEADPHONE AMPLIFIER:

Output Impedance Range: 8-2,000 $\Omega$   
Output Level: 4 watts into 8 $\Omega$   
Distortion: <0.5% THD at 1kHz  
Amplifier Gain: 35dB  
Frequency Response: 150-18kHz ( $\pm$ ) 2dB

#### PROGRAM AMPLIFIER:

Frequency Response: 150-18,000Hz  
Input: 100k $\Omega$  balanced  
Input Level: -15dBv nominal; +10dBv max\*

CHANNEL SEPARATION: >50dB

SIGNAL TO NOISE: 55dB

SIDE TONE: Adjustable from 25dB null to full on

#### OPERATING CONDITIONS:

Channel Monitoring: Programmable channels A, B, C, D with illuminated push on/push off switches  
Channel Override: Defeats programmed select switches

All Page: Talk to all 4 channels

Call Light Monitoring: Follows channel select switch

System Termination: 200 $\Omega$  impedance switchable on or off

System Level: -15dBv nominal; 0dBv before clipping\*

#### SIGNALLING:

Call Light Sensitivity: 4vdc

Signalling Voltage: 11vdc

#### CONNECTORS:

Headset Input Connector: 2 4-pin connectors (D4M)

Output Connectors: 8 (2 for each channel for loop-through convenience) Auxiliary Input: Switchcraft D3F

External Speaker Jack: Disconnects internal speaker

#### DIMENSIONS:

19"L x 3.5"H x 9"D

483mmL x 89mmH x 229mmD

#### ENVIRONMENTAL TEMPERATURE RANGE:

0-50°C (32-122°F)

Specifications subject to change without notice

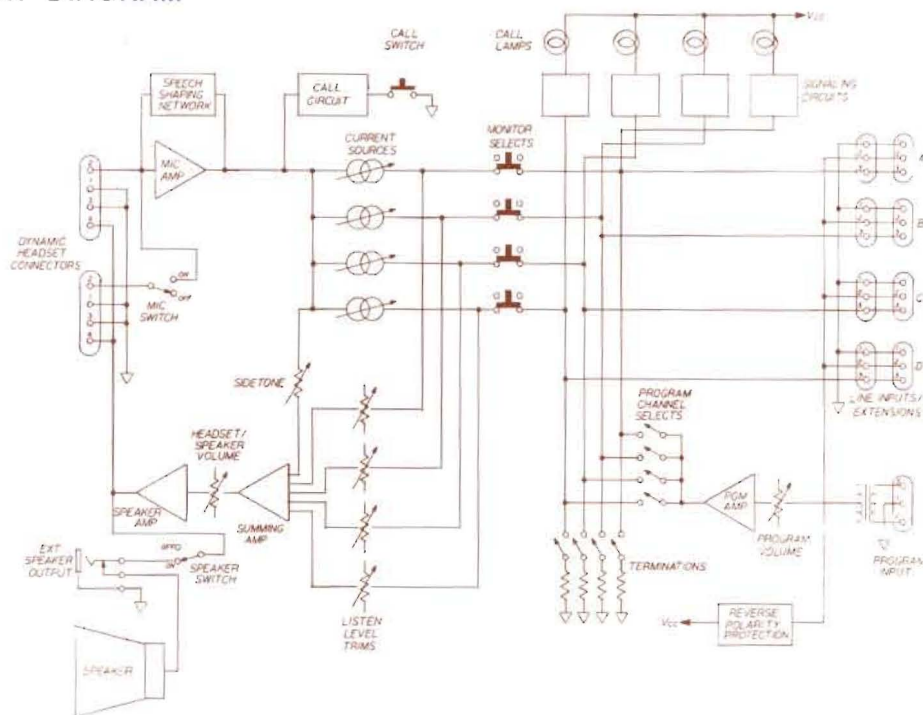
\*0 dBv is referenced to 0.775 volts rms.

## ARCH/ENG SPECS

The remote station shall be a 4-channel rack-mount intercom station. It shall have four illuminating monitor select switches for monitoring any or all channels. The talk and listen functions of the monitor select switches shall be programmable. The program select switches and level trim controls shall be accessible from the front panel. These controls shall be located behind a removable cover plate. When monitoring all channels the operator shall be able to communicate with them simultaneously without combining the channels into a common or partyline system. The station shall have a built-in speaker and a jack for connecting an external speaker. It shall have provisions for accepting a balanced line-level auxiliary input signal which shall be assignable to

any intercom channel. It shall also have a front panel control for adjusting the program level in the headset/speaker. It shall supply the terminating network for each channel. It shall have provisions for connecting two dynamic headsets to the station, and a level control to adjust the volume to the headset/speaker. It shall also have a front panel sidetone adjustment and a speaker ON-OFF switch. Remote stations shall have the ability to visually signal by illuminating the appropriate monitor select switch. The rear panel shall contain two XLR-type, 3-pin connectors for each channel, A-D. The electronics shall be solid-state, IC plug-in printed circuit amplifier modules. It shall be field-serviceable and replaceable. The station shall accept a 200 $\Omega$  dynamic microphone with a nominal level of -55dBv. The station's frequency response shall be 250Hz to 12kHz. It shall be capable of driving the line of any channel to a maximum level of 0dBv. The headphone amplifier shall be able to drive a headset with an impedance of 8 $\Omega$  to 2000 $\Omega$  and shall be capable of delivering an output level of +20dBm at 600 $\Omega$ . The distortion shall be less than 0.5% THD at 1kHz. The station shall also incorporate a mic on/off switch on the front panel. The mic preamp shall incorporate a limiter, and shall automatically shut off when the headset is disconnected from the station. The auxiliary input shall have a frequency response of 150-18kHz ( $\pm$ 2dB). The station's dimensions shall be no greater than 19" x 3.5" x 9" deep.

### RM-400 BLOCK DIAGRAM





# M A I N S T A T I O N



## SB-412 FOUR-CHANNEL MAIN SWITCHBOARD STATION

### F E A T U R E S

- Supports up to 100 Remote Stations on 4 channels
- Selectable monitoring system
- Programmable talk/listen functions for each channel
- 4 x 12 switchboard matrix
- Switchboard inputs assignable to any channel or private line
- Functions include Visual Signalling and "All Page"
- Balanced program input, assignable to any or all channels
- Separate intercom, program, and sidetone level controls
- External speaker jack
- Circuit-breaker-protected with short circuit indicator and re-set button
- Available with gooseneck mic, length-adjustable (1"-12")



### D E S C R I P T I O N

The SB-412 is an extremely versatile broadcast standard main switchboard station with a regulated power supply and a programmable monitoring system. It features Clear-Com's excellent speech intelligibility in high- and low-noise environments.

The SB-412 contains a mic preamp with a limiter and a four-watt power amp, so it can drive two dynamic headsets and an external speaker. The station drives a standard Clear-Com headset to levels greater than 110 dB SPL.

#### MONITORING SYSTEM

The SB-412 supports four channels containing as many as 100 remote headset stations or 20 speaker stations. The operator monitors the intercom activity on the channels with locking "Monitor Select" buttons. These buttons light dimly when engaged. One, two, three, or all four channels can be monitored simultaneously without tying the channels together.

The SB-412 operator pre-sets the monitor functions for each channel. For instance, Channel A may be programmed for talk-only, Channel B for listen-only, and Channels C and D for talk and listen. Four "Channel Override" buttons momentarily cancel the pre-sets when the operator needs two-way communicating, and the "All Page" button lets the operator talk to four channels at once.

#### SWITCHBOARD MATRIX

The SB-412 contains a switchboard matrix that provides intercom output connectors for 12

remote stations or groups. Each output is switch-assignable to any of four channels or the "Off" position. All stations connected to an input may communicate amongst themselves but are disconnected from the switchboard and all other groups of stations on the matrix. The matrix is ideal for re-patching remote stations in various combinations.

#### SIGNALLING

Visual Signalling attracts the attention of operators who've removed their headsets or turned off their speakers. The SB-412 Call button signals the stations on channels that have been previously chosen with the Monitor Select buttons. When a remote station sends a Call signal, the Monitor Select button associated with that station's channel will light brightly, whether in the "on" or "off" position. (The Visual Signal Circuit is also used to activate the optional remote page feature at other stations.)

When a remote station on one of the 12 switchboard outputs activates a Call signal, the LED above its associated slide-switch will light (even if that output is assigned to "Off" position).

#### SIDETONE

Sidetone control allows the operator to vary the level of his/her own voice as heard in the headset; it also suppresses acoustic feedback when using an external speaker. The SB-412 provides one sidetone adjustment for each channel, and one for overall sidetone in the headset.

*continued*



PROGRAM INPUT

The SB-412 accepts a balanced, line-level program input which is heard in the headset/speaker and can be mixed with the intercom audio on any or all channels. Program volume (as well as sidetone level) is individually set for each channel with trimpots located beneath the top cover of the unit.

POWER SUPPLY PROTECTION

The SB-412 provides a red lamp to indicate a short circuit in the system, and a circuit-breaker re-set button that enables instant operation once the short is removed. The station's power supply is regulated, current-limited, and provides 28 volts at two amperes from a 115V or 230V AC mains supply. The SB-412 provides the necessary audio termination for the intercom system.

EASY INTERCONNECTION

The SB-412 connects to the remote stations with standard two-conductor mic cable. The station's rear panel provides four 3-pin, XLR connectors for the output of each channel, plus 12 similar connectors for the outputs from the switchboard matrix.

GOOSENECK MIC OPTION

The SB-412 is available with a permanently-attached, noise-cancelling electret mic on a gooseneck with adjustable length (up to 12"). The mic is installed in the top headset connector. When the mic switch is set to momentary "on", the mic activates and the speaker is attenuated by 10 dB to reduce the possibility of feedback.

SPECIFICATIONS

- AMPLIFIER DESIGN:**  
IC amplifiers including solid state switching and signalling circuits. Current limited and short circuit protected.
- MICROPHONE PRE-AMP:**  
Microphone Input: 200Ω nominal dynamic type  
Maximum Input Before Limiting: -50dBv\*  
Mic Pre-Amp Frequency Response: 250Hz-12kHz  
contoured to enhance voice intelligibility  
Headset Mic Input Level: -15dBv max\*
- HEADPHONE AMPLIFIER:**  
Output Impedance Range: 8-2kΩ  
Output Level: 4 watts into 8Ω  
Distortion: 0.5% THD @ 1kHz  
Amplifier Gain: 35dB  
Frequency Response: 150-18kHz (±2dB)
- PROGRAM AMPLIFIER:**  
Frequency Response: 150-18,000Hz  
Input: 47kΩ single-ended 100kΩ balanced  
Input Level: -15dBv nominal; +10dBv max\*
- POWER SUPPLY:**  
Output Voltage: 30 volts circuit breaker protected, regulated  
Output Current: 2 amps maximum
- CHANNEL SEPARATION:** -50dB
- SIGNAL TO NOISE:** -55dB

**SIDE TONE:** Adjustable from 25dB null to full on

- OPERATING CONDITIONS:**  
**Channel Monitoring:** Programmable talk & listen functions for each channel A, B, C, D with illuminated push on/push off switches  
**Channel Override:** Bypasses programmed select switches  
**All Page:** Talk to all positions of matrix including OFF  
**Call:** Follows channel select buttons  
**Capacity:** Will support up to 100 Remote Headset Stations or 20 Remote Speaker Stations.  
**System Termination:** 200Ω AC impedance, switchable on or off  
**System Level:** -15dBv nominal; 0dBv before clipping\*
- SWITCH MATRIX:**  
**Capacity:** 12 in x 5 positions (OFF, A, B, C and D). Off position is terminated in 200Ω.

- SIGNALLING:**  
**Call Light Sensitivity:** 4vdc  
**Signalling Voltage:** 11vdc

- CONNECTORS:**  
**Headset Input Connector:** 2 4-pin male XLR connectors  
**Output Connectors:** 16 (12 for remote station input, 4 for channel busses)  
**Auxiliary Input:** 3-pin female XLR  
**External Speaker Jack:** Disconnects internal speaker; 1/4" phone jack

- POWER REQUIREMENTS:** 115 or 230 volts 50-60 Hz. 80 VA maximum

- DIMENSIONS:** 19" L x 3.5" H x 9" D  
483mm x 89mm x 229mm

- ENVIRONMENTAL TEMPERATURE RANGE:** 0-50 °C (32-122 °F)

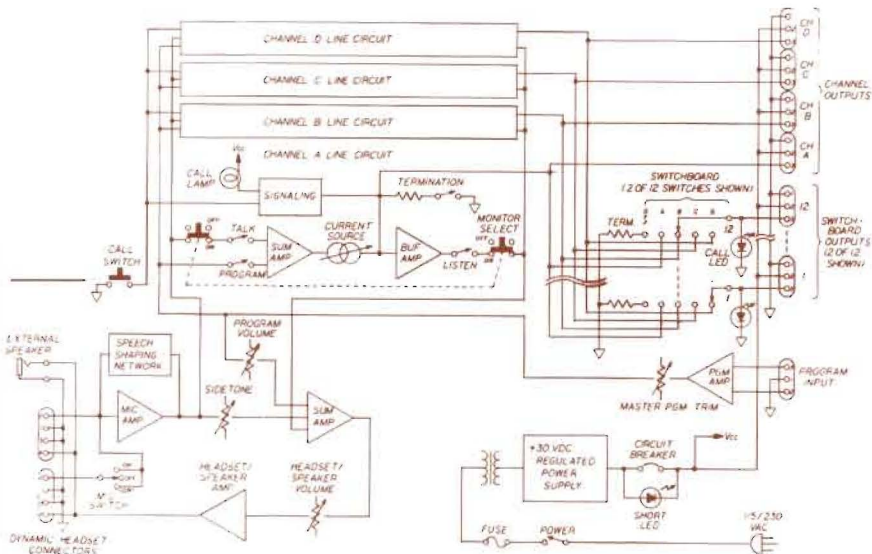
- Specifications subject to change without notice  
\*0 dBv is referenced to 0.775 volts rms.

ARCH/ENG SPECS

The main station shall be a 4-channel rack-mount intercom station with a 12 x 5-position assignment matrix. It shall contain a 30 volt regulated power supply capable of delivering 2 amps, circuit-breaker protected against external shorts, and shall have a front panel-mounted red LED to indicate a shorted condition. It shall have provisions for connecting two headsets to the station and provide a front panel mic on/off switch for one headset. The station shall have four illuminating Monitor Select switches for monitoring 1 to 4 channels. The talk and listen functions of the monitoring system shall be pre-settable. When monitoring 2 or more channels, the operator shall be able to simultaneously communicate with each without combining the channels into a common or partyline

system. The matrix section shall accept 12 inputs or 12 groups of inputs, and each one shall be associated with a front panel slideswitch used for variable assignment of the input to channels A, B, C, D, or "Off." In the "OFF" position, each input group shall have normal communications within that group, but shall be separated from every other input group. The station shall have a connector for accepting a balanced line-level auxiliary input (Program) which shall be assignable to any channel and heard in the station's headset. It shall have one front panel control for adjusting the program level and another front panel control for adjusting the station's headset/speaker intercom level. Talk, listen, program assignment switches, and listen level trim controls for each channel shall be accessible from the front panel. These controls shall be located behind a removable cover plate. The station shall supply the terminating network for each channel. It shall provide a jack for connecting an external speaker, and the headset volume control shall also adjust the speaker level. The station shall have a front panel sidetone adjustment and sidetone null controls for each channel, adjustable from 25dB null to full on. The remote stations shall have the ability to visually signal the main station by illuminating the appropriate Monitor Select switch and/or by illuminating the appropriate amber LED located above the matrix regardless of matrix/monitor switch positions. The main station shall provide a front panel pushbutton to activate the visual signal circuit. The station shall provide a Channel Override pushbutton for each channel for momentary full talk/listen capability, and it shall provide an All Page pushbutton for making an announcement to all stations including those in the matrix Off position. The station's rear panel shall contain 4 XLR-type, 3-pin connectors for bussing each channel A-D and shall also contain 12 XLR-type, 3-pin connectors for inputs to the matrix. The electronics shall be solid-state, IC plug-in printed circuit amplifier modules. The station shall be field-serviceable and replaceable. It shall accept a 200Ω dynamic microphone with a nominal level of -55dBv. The station's frequency response shall be 250Hz to 12kHz. It shall be capable of driving the line of any channel to a maximum level of 0dBv. The headphone amplifier shall be able to operate a headset with an impedance of 300-2000Ω, and shall be capable of delivering an output level of +20dBm at 600Ω. The distortion shall be less than 0.5% THD at 1kHz. The station's mic preamp shall automatically shut off when the headset is disconnected from the station. The station shall have the capacity to power 100 remote headset stations or 20 remote speaker stations. The auxiliary program input shall have a frequency response of 150-18kHz (±2dB). The power supply shall operate from 105-125 VAC or 210-260 VAC, 50-60Hz with maximum power consumption of 80 watts. The station's dimensions shall be 19" W x 3.5" H x 9" D. It shall be called a Clear-Com SB-412.

SB-412 BLOCK DIAGRAM





# D L C S E R I E S



## **MS-808 PROGRAMMABLE DISTRIBUTION MAIN STATION IS-808 PROGRAMMABLE INTERCOM STATION**

### F E A T U R E S

- Provides up to 8 intercom channels and 8 IFB channels
- Includes dedicated line for point-to-point communications
- Built-in Channel Assignment Matrix
- Selective monitoring system
- Accepts 1-4 plug-in control modules:
  - CH-4 Intercom Module
  - IFB-4 IFB Module
  - SP-4 Speaker Module
  - BP-4 Filler Module
- Balanced input for program monitoring in headset
- Selective assignment of program to intercom channels



- Separate intercom, program, and sidetone level controls
- Stage Announce
- Visual Call Signalling
- Speaker on/off switch
- External speaker jack
- Includes noise-cancelling gooseneck mic; adjustable length (1"-12")
- Provision for dynamic headset
- Mic limiter
- Circuit-breaker-protected with short-circuit indicator and re-set button
- MS-808 can support up to 100 standard remote stations
- Broadcast-standard circuit design
- Easy to interconnect
- Fits standard 19" equipment racks

### D E S C R I P T I O N

The Clear-Com DLC Series is a high-performance intercom system designed for teleproduction and broadcast facilities. Its versatility and reliability make it ideal for commercial or industrial use as well. The DLC Series features innovative solid-state circuitry and digital logic control for programmable, two-way "Party Line" or point-to-point communications.

#### A MODULAR APPROACH

The DLC Series consists of various interchangeable components and accessories that allow a system to be configured to

meet exact individual specifications. The system can interface with many 2-, 3-, and 4-wire communications devices, including television cameras, telephone lines, and other intercom systems such as RTS.

The DLC Series consists of two mainframes: the **MS-808** and the **IS-808**. Each one accepts up to four plug-in "control modules." Both are self-powered; the MS-808's regulated power supply is slightly larger, so it can support an entire intercom system containing standard remote headset or speaker stations.

Essentially a highly-advanced intercom system, the DLC Series can be fully integrated with a **Program Interrupt (IFB) System** to provide talent cuing and program monitoring. The MS and IS mainframes and the PIC-4 IFB Controller interconnect with a single cable: 12-pair, individually-shielded (not included with system). Components of the IFB System are powered via the connection to the intercom system.

Whether providing intercom or IFB, the DLC Series features Clear-Com's excellent speech intelligibility in all low- or high-noise environments. The speech-shaping circuitry incorporates mic limiting. The mic preamp combined with the 4-watt power amp supports a built-in gooseneck mic, a dynamic headset, and an internal or external speaker. A standard Clear-Com headset will be driven to levels greater than 110dB SPL.

*continued*



## VERSATILE MONITORING SYSTEM

With the CH-4 plug-in module, the mainframe operator can access any channel with one of two switches assigned to it. The "channel-listen" control is a locking pushbutton that glows dimly when engaged, and the "channel-talk" control is a 3-position toggle with locking-on, momentary-on, and off settings.

### Dedicated Line

Each MS/IS mainframe has an input for a dedicated line. This hands-free line allows the mainframe operator to maintain on-going point-to-point communications with another mainframe operator. Up to nine stations can be configured for a point-to-point communications system.

### Assignment Matrix

The MS/IS mainframe contains a 9 x 10-position slideswitch matrix that assigns each set of channel controls (on the plug-in modules) to the line inputs on the rear panel. The matrix also assigns the dedicated line to the desired destination (for a point-to-point system), or "parks" it in a disabled position (for a party-line system).

### Program Monitoring

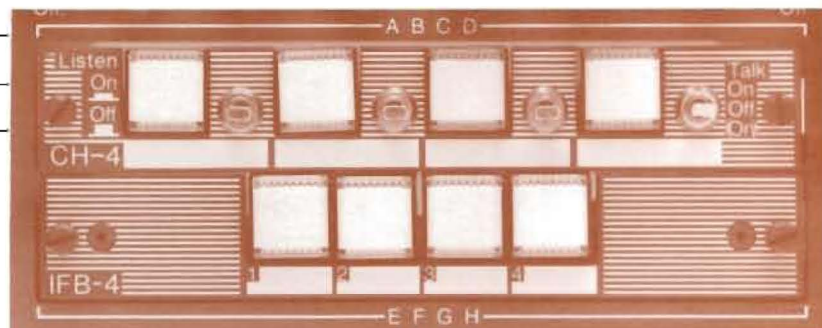
The MS/IS mainframe provides an auxiliary balanced input for monitoring external program; the operator hears the program in the headset or speaker, and can send the program on any or all intercom channels so remote stations can monitor it also.

### "Stage Announce"

The DLC Series contains an array of standard features to enhance communications, including Stage Announce, which lets the operator switch the station's amplified mic output to an output connector on the rear panel. A front panel button labelled "S/A" activates the output, giving the operator access to an external speaker/amp system. This output is line-level balanced, and works in conjunction with a "speaker mute" function on the rear panel.

### "Call" Signalling

Also included is Visual Call Signalling, which attracts the attention of operators who have removed their headsets or turned off their speakers. When a remote station on one of the channels sends a call signal, the channel-listen button for that station's channel will glow brightly



CH-4 & IFB-4 CONTROL MODULES

(regardless of the button's on/off position).

### Sidetone Control

The MS/IS mainframe provides sidetone control, allowing the operator to vary the level of his/her own voice as heard in the headset/speaker. Sidetone control also suppresses acoustic feedback when using the speaker and the gooseneck.

### POWER SUPPLY PROTECTION

The MS-808 provides audio termination for the intercom system. It also provides a red lamp to indicate a short circuit in the system, and a circuit-breaker re-set button that enables instant operation once the short is removed. The station's power supply is regulated, current-limited, and provides 28 volts at two amperes maximum from a 115V or 230V AC mains supply. The IS-808 is also circuit-breaker-protected with its own power switch, short circuit indicator, and re-set button.

### EASY INSTALLATION

The MS/IS mainframe installs in a standard 19" equipment rack, using 3.5" vertically. Shielded two-conductor mic cable connects the MS-808 to standard intercom stations, while shielded 12-pair cable interconnects DLC components.

The MS mainframe provides nine 3-pin, XLR connectors for output of eight channels and the dedicated line, and one 30-pin output (Tuchel connector) for connection to other DLC Series components. The IS mainframe provides two 30-pin connectors for input and loop-through extension of signals.

The DLC mainframe is supplied with two female 30-pin connectors for cable construction.

## PLUG-IN MODULES

### CH-4 Intercom Module

The CH-4 Module provides circuitry and controls for four separate, two-way intercom channels. Each channel has a locking "listen" button and a locking/momentary "talk" switch. When activated, the "listen" button glows dimly. When a call signal is sent on a channel, the "listen" button for that channel glows brightly, whether the button is activated or not. One or two CH-4 Modules can be used in one MS or IS mainframe.

### IFB-4 Program-Interrupt Module

The IFB-4 Module provides four separate, one-way IFB channels. Each IFB channel has a momentary button that, when activated, switches the operator's mic to that channel and sends a signal to interrupt the program at the PIC-4 Controller (which connects to receivers worn by Talent). One or two IFB-4 Modules can be used in one MS or IS mainframe.

### SP-4 Speaker Module

Installed in the left side of the front panel, the speaker is controlled by the front panel on/off switch. This oval, 8-ohm speaker provides crisp sound output levels, mixing together the intercom and program signals. Connecting the mainframe to an external speaker disconnects the internal speaker, and the on/off switch controls the external one.

### BP-4 Blank Filler Module

Covers unused slots in front panel of MS or IS mainframe; can be removed for adding more Control Modules.





PIC-4 IFB CONTROLLER

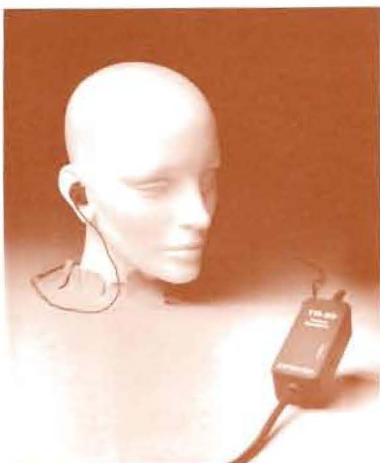
## DLC SERIES ACCESSORIES

### PIC-4 Program-Interrupt Controller

A 1.75" rack-mount unit that enables up to four talent to monitor one of two program signals, which the director (MS or IS operator) can interrupt for cuing. Used in conjunction with IFB-4 Control Module(s). Two PIC-4's can be daisy-chained for accessing up to eight talent. Includes dip level controls and allows program to be sent continuously or with interrupt function (switch-selectable). Available with split-feed program connectors (6-pin XLRs; specify amount needed when ordering).

### TR-50 Talent Receiver with Earphone

A compact unit with miniature earpiece; allows talent to monitor program and hear director's cues. Includes volume control and spring clip for attaching to belt or under table.



TR-50 TALENT RECEIVER

### RS-201 Split-Feed Talent Receiver

A versatile belt-pack that allows talent to monitor two different program signals or monitor continuous program in one ear and interrupted program (with cues) in the other ear. Provides separate volume control for each side. Works with dynamic, binaural headset. Ideal for sportscasters and news commentators. Must connect to PIC-4 that has optional split-feed program connectors (6-pin XLR).



IF4-4 TV CAMERA INTERFACE

### IF4-4 Four-Wire Interface

A 1.75" rack-mount unit that interfaces up to four 4-wire TV cameras to the intercom system. Designed to match standard 600 ohm transmit/receive lines at normal line levels to Clear-Com. Provides transmit, receive, and sidetone level controls for each interface. Also works with 3-wire TV camera systems.

### IC-DLC/10, IC-DLC/25, IC-DLC/50, IC-DLC/100

Twelve-pair interconnect cables with 30-pin (Tuchel) connectors installed for immediate set-up of DLC System. Available in lengths of 10', 25', 50', and 100' (other lengths available to order; consult factory).

## OPTIONS

### All Page/All IFB

The unmarked button on the mainframe's front panel can be wired to serve specified purposes. "All Page" lets the mainframe operator address all intercom channels at once (one way; talk only). "All IFB" lets the mainframe operator dip program and cue talent on all IFB channels simultaneously.

### Binaural Headset Connector

Instead of a 4-pin XLR connector, the mainframe is supplied with a 6-pin XLR connector for use with a binaural headset; intercom signals are monitored in one earphone, program signals in the other.

### Channel ISO

Can be applied to any of the channels on the CH-4 modules; this option allows the mainframe operator to hold a private conversation with any channel(s) without having to turn off the "talk" monitor switches for all other channels.

## SPECIFICATIONS

### DLC SERIES SPECIFICATIONS

**AMPLIFIER DESIGN:** IC amplifiers including solid-state switching and signalling circuits. Current-limited and short-circuit protected.

### MICROPHONE PRE-AMP

**Microphone Input:** 200Ω nominal dynamic type  
**Mic Input Level:** -55dBv nominal\*  
**Frequency Response:** 250-12k Hz with mic limiter to maintain level and to prevent overload  
**Limiter Range:** 25dB  
**Gain Adjust:** ±5dB (gooseneck mic only)

### HEADPHONE AMPLIFIER

**Output Impedance Range:** 50-2000Ω  
**Output Level:**  
Speaker: 4 watts into 8Ω  
Headset: +20dBv\* into 600Ω  
**Distortion:** <25% THD at 1kHz  
**Amplifier Gain:** 35dB  
**Frequency Response:** 150-18k Hz ±2dB

### PROGRAM AMPLIFIER

Switchable for 0-4 channels per CH-4 Control Module with individual level controls  
**Frequency Response:** 150-18k Hz  
**Input:** 50kΩ transformer-less, balanced  
**Input Level:** -20 to 0dBv\*  
**Common Mode Rejection:** >50dB

### POWER SUPPLY

**Output Voltage:** 30 volts regulated; circuit-breaker protected (MS-808 only)  
**Output Current:** 2 amps maximum, MS-808; 1 amp maximum, IS-808

### VOLTAGE GAIN

**Mic-to-Line:** 37dB nominal  
**Mic Gain Adjust:** ±5dB  
**Line-to-output:** 37dB

**CHANNEL SEPARATION:** ≥50dB

**SIGNAL-TO-NOISE:** ≥55dB

**SIDETONE:** Adjustable from >25dB pull to full on

### OPERATING CONDITIONS

**Channel Monitoring:** Programmable channels with illuminated locking monitor switches  
**Sending Call Signal:** Follows position of "listen" monitor switches  
**Call Light Sensitivity:** 4 VDC  
**Signalling Voltage:** 1 VDC  
**Capacity (MS-808 only):** Will support up to 100 remote headset stations or 20 remote speaker stations  
**System Impedance:** 200Ω or 15kΩ bridging, switchable  
**System Level:** -15dBv nominal; 0dBv before clipping\*

### CONNECTIONS

**Headset Inputs:** (1) XLR male 4-pin  
**Line Outputs:** MS-808, (9) XLR male 3-pin, (1) 30-pin male; IS-808, (1) 30-pin male, (1) 30-pin female  
**Program Input:** (1) XLR female 3-pin  
**Stage Announce:** 1/4" jack  
**Speaker Mute:** 1/4" jack  
**External Speaker:** 1/4" jack

**AC POWER REQUIREMENTS:** 105-130 VAC; 48-62 Hz; 80 watts maximum. May be modified for 210 to 260 VAC.

**DIMENSIONS:** 19" x 3.5" x 9"  
483mm x 89mm x 229mm

**AMBIENT TEMPERATURE TOLERANCE:** 0-50°C, 32-112°F

Specifications subject to change without notice

\*0 dBv is referenced to 0.775 volts rms.







# SYSTEM INTERFACE



## WRS-3 WIRELESS INTERFACE/ BASE STATION

### FEATURES

- Interfaces wireless system with Clear-Com and other hard-wired intercom systems
- Use in partial or full duplex system
- Provides clear, noise-free transmission/reception
- Headset input
- Sidetone and listen level controls
- LED indicators for "signal" and "power"
- External speaker jack
- Transmit range up to 1/4 mile
- Rugged and lightweight
- Ideal in high- and low-noise environments



### DESCRIPTION

The WRS-3 Base Station provides the freedom of wireless communications and the ability to interface the wireless system with any closed-circuit, three-wire intercom system. The transmission/reception design of the WRS-3 assures crisp, noise-free, duplex communications, even near RF fields, lighting dimmers, and other sources of electromagnetic interference.

The WRS-3 features a dynamic headset input, sidetone level and listen-level controls, as well as "signal" and "power" LED indicators. Two hands-free operating modes are possible: "transmit" or "stand-by" (receive only).

The Base Station's rear panel includes a switch for selecting system party-line operation. It also provides a squelch control, external speaker jack, external power source jack (12-18 VDC), and a 3-pin, male, XLR connector for interfacing with a hard-wired intercom system.

When the WRS-3 is interfaced with a Clear-Com intercom channel, the Clear-Com Station operators can easily communicate, hands-free, with the wireless system operators—just as if the

wireless operators are using standard Clear-Com belt-pack stations.

The WRS-3 operates with full duplex VHF Transceivers that must have the following operating frequencies: Transmit at 49.875 MHz (Channel D); Receive at 49.830 MHz (Channel A).

A telescope antenna is included with the WRS-3. It runs off 115 VAC mains, 60Hz, and can be optionally powered by a 30 VDC source.

The WRS-3 can be used in two different types of systems:

#### FULL DUPLEX

A Full Duplex system requires the Base Station and one 49 MHz Duplex Transceiver (eg Nady PRC-3). It permits continuous, simultaneous, and hands-free talk/listen ability between the Base Station user, Transceiver user, and hard-wired intercom users. All intercoms have continuous two-way communications and the Transceiver operates **just like a standard Clear-Com belt-pack station without wires.**

*continued*



PARTIAL FULL DUPLEX

This type of system requires the Base Station and two or more 49 MHz Duplex Transceivers. It provides the same hands-free, two-way communications as above, under slightly different operating conditions. All transceivers **except one** must be in receive-only ("stand-by") mode and each transceiver user must transmit one-at-a-time. All transceiver users listen simultaneously to the Base Station user and those on the wired intercom line. The one transmitting transceiver talks to the Base Station, and the other transceiver users can listen via a "party line" loopthrough in the Base Station. The hard-wired intercoms connected to the Base Station may communicate hands-free with the transceiver operators.

SPECIFICATIONS

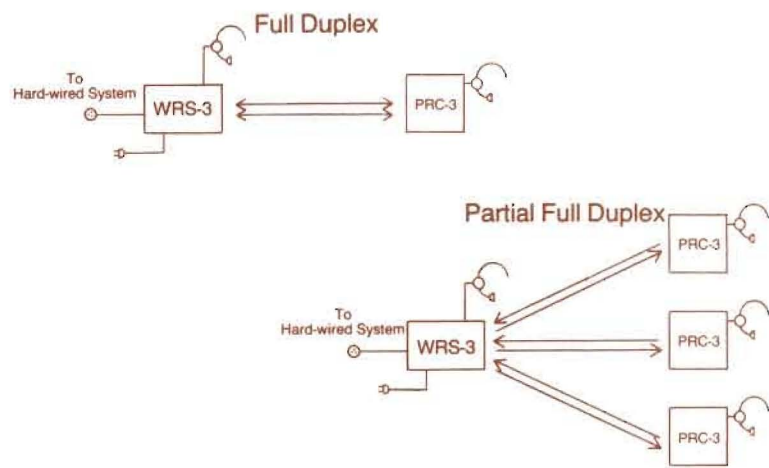
**WRS-3 RECEIVER SPECIFICATIONS**  
Receiving System: FM Double Superheterodyne (simultaneous full duplex with receive-only "standby" option)  
Sensitivity: 1µ V (0dB) (20dB quieting)  
Modulation Acceptance Bandwidth: 5kHz  
Spurious & Image Rejection: 20dB min  
Freq. Stability: 5 PPM (0°C to +40°C)  
Receive Frequency: 49.875 MHz

**WRS-3 TRANSMITTER SPECIFICATIONS:**  
Transmit System: Simultaneous full duplex  
Output Power: 10,000µ V/m at 3m  
Max. Frequency Deviation: 4.5kHz  
Spurious & Harmonic Emissions: 20dB min  
FM Hum & Noise: 40dB  
Freq. Stability: 5 PPM (0°C to +40°C)  
Transmit Frequency: 49.830 MHz

**WRS-3 GENERAL SPECIFICATIONS**  
Power Source: 115V, 60Hz AC, 30VDC optional  
Service Range: approx. 1/4 mile  
Dimensions: 5.3"W x 2.2"H x 6.8"D  
135mmW x 56mmH x 173mmD  
Weight: 2.5 lbs

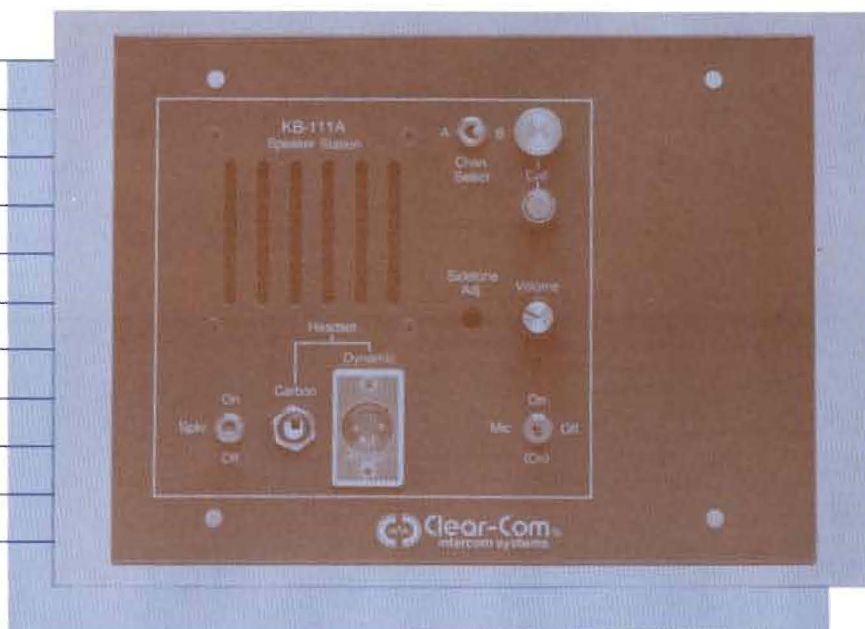
**WRS-3 INTERCOM INTERFACE SPECIFICATIONS**  
(Clear-Com line conditions)  
Line Bridging Impedance: >2kΩ (200-10k Hz)  
Line Level: -20dB, 0dB max  
P.T.T. Voltage: 4 volts minimum  
Mic Input: 200Ω dynamic  
Mic Pre-amp Freq. Response: 250-12k Hz with contoured response to enhance speech intelligibility  
Headphone Load Impedance Range: 300-2000Ω  
Headphone Output Level: +10dBm before clipping  
Distortion: 0.1% THD at 1kHz  
Headset Connector: D4M 4-pin male, Switchcraft type  
Line Connector: D3M 3-pin male, Switchcraft type

WRS-3 BLOCK DIAGRAM





# R E M O T E   S T A T I O N



## KB-111A TWO-CHANNEL SPEAKER STATION

### F E A T U R E S

- Allows selectable two-channel communicating
- Wide frequency response speaker with on/off switch
- Intercom volume control
- Operates with carbon or dynamic headsets
- Mic on/off switch and adjustable sidetone
- Visual Call Signalling
- Portable or permanent installation



## D E S C R I P T I O N

The KB-111A is a broadcast-standard, remote speaker station that allows talking and/or listening on either of two channels in a Clear-Com System.

Compatible with all Clear-Com intercoms, the KB-111A features excellent speech intelligibility in high- and low-noise environments. The wide frequency response speaker delivers crisp sound pressure levels, high enough to be heard in the noisiest surroundings.

The KB-111A operates with a carbon headset or a dynamic headset/telephone-style handset. It drives a standard Clear-Com headset to levels greater than 110 dB SPL, and can support two dynamic headsets at once (if connected with the suitable "Y" cord). The KB-111A's speaker can be turned off when private conversation via the headset is desired; alternately, a mic on/off switch is provided to let the KB-111A function as a "listen-only" or remote page station.

The KB-111A contains a recessed sidetone control, which allows the operator to vary the level of his/her own voice as heard in the headset/speaker. Sidetone control also suppresses acoustic feedback when using the speaker.

The KB-111A features Visual Call Signalling; the Call button allows you to attract the attention of operators who've removed their

headsets or turned off their speakers. The KB-111A's amber Call lamp illuminates when another operator (using the same channel) sends a Call signal.

The KB-111A is a custom-mounting station; its no-glare charcoal-brown, aluminum front panel installs in a cut-out in a wall, console, or rack, or inside a 6" x 8" Nema Type 1 box.

Standard mic cable connects the KB-111A to the intercom system; wire run in conduit is also suitable. The station provides a clearly-labelled, 5-pin terminal strip for interconnection behind the front panel.

Bidirectional current sourcing and low current drain allow as many as 20 KB-111A stations (powered by one Main Station/Power Supply) along one mile of wire with no significant loading effects. New circuit design virtually eliminates all hum and noise pick-up from SCR dimmer and AC power sources.

### ACCESSORY

#### P-Box

For portable use, the KB-111A installs in the Clear-Com P-Box, a sturdy, lightweight aluminum enclosure with a sloped front, walnut sides, and carry strap (allows one channel only). Provides 3-pin input and extension connectors.



## SPECIFICATIONS

### AMPLIFIER DESIGN

Solid state, integrated circuit amplifiers which include a mic preamp, headset/speaker power amplifier and signalling circuitry. Current limited with short circuit and reverse polarity protection.

### MIC PREAMPLIFIER

**Frequency Response:** 250-12kHz with contoured response to enhance voice intelligibility.

**Mic Input:** 200 $\Omega$

**Mic Preamp Gain:** 37dB

**Max Input Before Clipping:** 34dB

### HEADPHONE AMPLIFIER

**Frequency Response:** 100-18kHz  $\pm 2$ dB

**Load Impedance Range:** 8 $\Omega$ -2k $\Omega$

**Output Level:** +20dBV\*, 26v p-p at 100 $\Omega$

**Headset Level:** > 110 dB SPL with standard Clear-Com headsets

**Speaker Level:** >98dB SPL at 3 feet

**Speaker Type:** 3" round, 16 $\Omega$

**Power Output:** 2 watts into 8 $\Omega$

**Distortion:** 0.5% THD at 1kHz

**Headphone Amp Gain:** 38dB

### CONNECTORS

**Headset:** Male D4M. Switchcraft type

**Line:** 5 screw terminal block

### GENERAL

**Line Level:** -15dBv max\*

**Sidetone Adjustment:** 35dB null to full on

**Signalling Voltage:** 11 volts DC on audio line

**Call Light Sensitivity:** 4 volts

**Signal-to-Noise:** 75dB

**Equivalent Input Noise:** 121dB

**Station Bridging Impedance:** <20k $\Omega$  (200-10kHz)

**Power Requirements:** 20 ma quiescent, 60 ma average talk, 60 ma signalling, 200 ma short circuit.

**Voltage Range:** 12-32 volts, 28 volts nominal.

**Dimensions:** 8.6" x 6.5" x 3.25" deep

218mm x 165mm x 83mm deep

Specifications subject to change without notice

\*0 dBv is referenced to 0.775 volts rms.

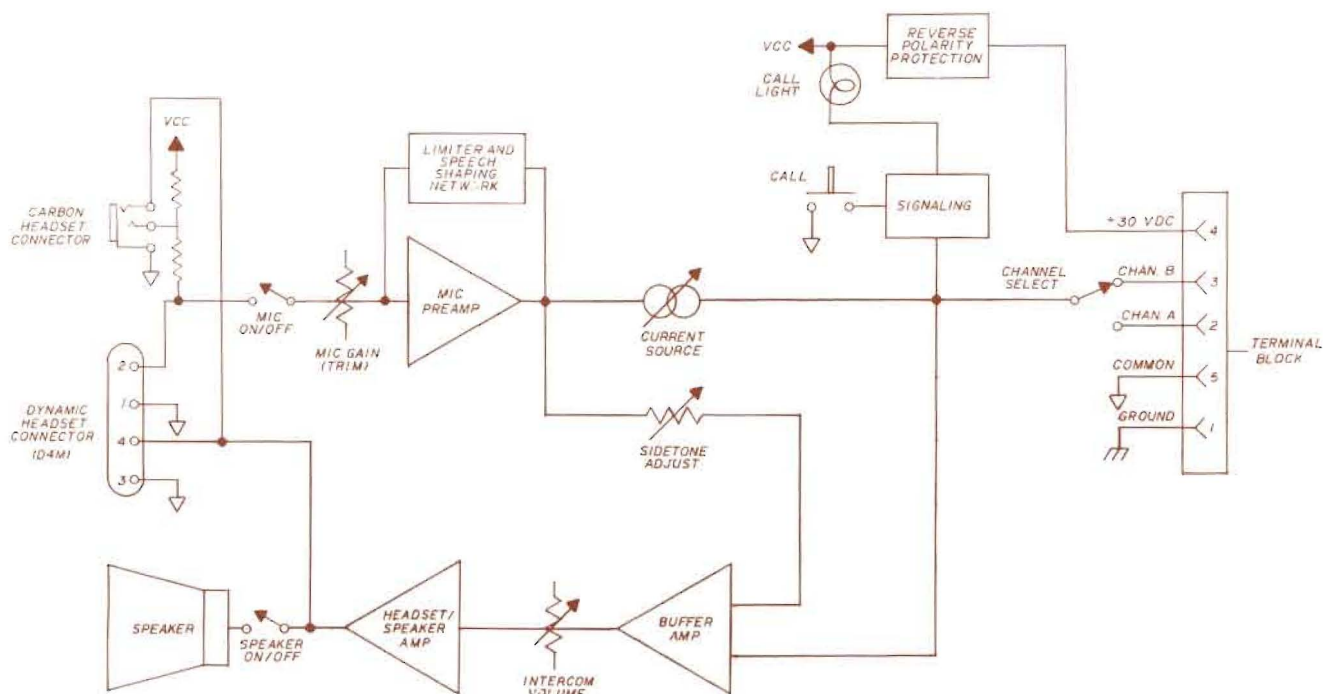
## ARCH/ENG SPECS

The intercom station shall be a custom-mounting, 5/32" aluminum panel painted charcoal-brown. It shall be a two-channel intercom speaker station with front panel connectors for carbon and dynamic headsets. The intercom shall have the necessary provisions for interfacing to the standard Clear-Com system. It shall have a 5-screw terminal strip on the PC Board for intercom signal and power to be brought to the station. The intercom shall be able to mount inside a 6" by 8" Nema Type 1 electrical box. The intercom's speaker shall be a 3" round, 16 $\Omega$  type. The intercom's controls shall include an intercom volume adjustment, a channel select switch, momentary Call signal button and Call signal lamp, a mic on/off/momentary-on switch, a speaker on/off switch, and a recessed sidetone adjustment. The intercom electronics shall consist of a mic preamplifier, power amplifier and signalling circuit. The intercom shall be current-limited and short-circuit-proof and shall have reverse polarity protection. It shall be field-serviceable and replaceable. The intercom station preamplifier shall automatically shut off when the headset is disconnected. The intercom bridging impedance shall be greater than 12k $\Omega$  over a frequency of 200Hz to 10kHz. The intercom shall use no transformers for connecting to the intercom line. The frequency response and impedance of the intercom shall not change as other stations join or leave the system. The intercom shall have an adjustable sidetone circuit that will allow up to 35dB null of sidetone. The mic preamplifier shall have an overall response of 250Hz-12kHz, contoured to enhance speech intelligibility. The intercom shall accept a standard carbon headset or a dynamic headset with a nominal 200 $\Omega$  impedance. -55dB mic and earphones from 8 to 2000 $\Omega$ . The headset/speaker power amplifier shall have a response of 100Hz to 18kHz,  $\pm 2$ dB. It shall deliver a level of >110dB SPL with 0.5% distortion. The power amplifier shall be capable of delivering 2 watts into 8 $\Omega$ . The speaker shall be capable of a maximum level of 98dB at 3 feet. The signal-to-noise ratio shall be 75dB with an equivalent input

noise of -121dB. Power supply RF EMI rejection shall be greater than 60dB referenced to the audio line. It shall operate from a power source of 12-32 volts DC and shall draw no more than 25 ma quiescent. The dimensions shall not exceed 8.6" x 6.5" x 3.25" deep. The weight shall not exceed 1.6 lbs. It shall be called a Clear-Com KB-111A.

The intercom station shall also be convertible to a single-channel portable type. It shall have the same specifications and functions as above. The intercom shall be housed in a portable, sloped-front enclosure constructed of .050 cold-rolled steel, with a carry strap and rubber feet. It shall have two 3-pin, XLR-type connectors, one male and one female, for input and extension of the intercom line. The enclosure shall be called a Clear-Com P-Box.

## KB-111A BLOCK DIAGRAM





# R E M O T E   S T A T I O N



## KB-112 PUSH-TO-TALK SPEAKER STATION

### F E A T U R E S

- Built-in electret mic with adjustable sensitivity
- Wide frequency response speaker
- Tamper-resistant, screwdriver-adjustable speaker volume control
- Programmable operation allows local or remote, hands-free control of speaker and mic
- "Mic On" LED indicator
- Visual Call Signalling; also activates remote control
- External audio input allows program monitoring
- Portable or permanent installation
- Interconnects with standard mic cable



### D E S C R I P T I O N

The KB-112 is a versatile single-channel Remote Station that provides two-way communicating ability. Compatible with all Clear-Com intercoms, the KB-112 is ideal in applications where a headset is inconvenient (such as Dressing Rooms, Front Lobbies, etc). It has a wide frequency response speaker and a push-to-talk electret mic.

The KB-112 features excellent speech intelligibility in all high- and low-noise environments; mic sensitivity is adjustable to ensure clarity. The speaker delivers crisp sound pressure levels high enough to be heard in the noisiest surroundings.

The KB-112 features "control logic" CMOS circuitry for programming how the station will be used. This allows remote or local control (or both) of the speaker and mic. A bank of dip switches on the electronics module are pre-set by the operator for desired operation. The remote operation of the KB-112 can be activated by all other Clear-Com Stations that have the visual signalling feature.

The KB-112 front panel contains a red LED that lights whenever the microphone is active. Especially helpful when the KB-112 is set up for remote control, the LED shows that another station operator has

turned on your mic.

Other KB-112 features are intercom volume control, Visual Call Signal button, and amber Call lamp.

The KB-112 provides an access point on its terminal strip for input from an external audio source. The station accepts an unbalanced, line-level signal from audio equipment such as mic mixers or portable amps, and mixes it with the intercom output from the speaker.

The KB-112 is a custom-mounting station; its no-glare charcoal-brown, aluminum front panel installs in a cut-out in a wall or console, or inside a 6" x 8" Nema Type 1 box.

Standard mic cable connects the KB-112 to the intercom system.

### ACCESSORY

#### P-Box

For portable applications, you can install it in the Clear-Com "P-Box," a sturdy, lightweight aluminum enclosure with a sloped front, walnut side panels, and a carry strap. Provides 3-pin input and extension connectors.



SPECIFICATIONS

**AMPLIFIER DESIGN:**  
Solid-state, integrated circuit amplifiers which include a mic preamp, speaker power amp, signalling circuitry, and logic control circuitry. Current-limited with short-circuit and reverse polarity protection.

**MIC PREAMPLIFIER**  
**Frequency Response:** 200-12kHz, contoured to enhance speech intelligibility  
**Mic Preamp Gain:** 25dB, low sensitivity; 31.5dB, high sensitivity  
**Mic Type:** electret

**SPEAKER AMPLIFIER**  
**Speaker Type:** 3" round, 16Ω  
**Power Output:** 2 watts into 16Ω  
**Frequency Response:** 100Hz-15kHz, ±3dB  
**Signal-to-Noise:** 75dB  
**Equivalent Input Noise:** 121dB  
**Line-to-Speaker Gain:** 30.5dB  
**Distortion:** 0.5% THD at 1kHz  
**Speaker Level:** 98dB at 3 feet

**GENERAL SPECS**  
**Station Bridging Impedance:** 18kΩ (200-10kHz)  
**Power Requirements:** 17 ma quiescent, 60 ma average talk, 60 ma signalling, 200 ma short circuit

**Voltage Range:** 12-32 volts, 28 volts nominal  
**Line Level:** 1dBv max\*  
**Signalling Voltage:** 11 volts DC on audio line  
**Call Light Sensitivity:** 4 volts  
**Program Input Impedance:** 500kΩ  
**Program Input Level:** 7v for max output

**CONNECTORS**  
**KB-112 to Line:** 5-screw terminal block

**KB-112 OPERATING MODES**  
**Normal:** Speaker is normally on. Mic is locally activated by momentary button on front panel.  
**Remote Page:** Mic is activated locally. Speaker is off except when turned on by remote control in order to page the KB-112 operator.

**Remote Listen:** Speaker is normally on. Mic is turned on locally or by remote control, which allows the KB-112 operator to talk hands-free.

**Remote Listen-Page:** Mic remains on for hands-free talking. Speaker is normally off. Another Station can turn off the mic and turn on the speaker for paging the KB-112 operator.

Specifications subject to change without notice  
\*0 dBv is referenced to 0.775 volts rms.

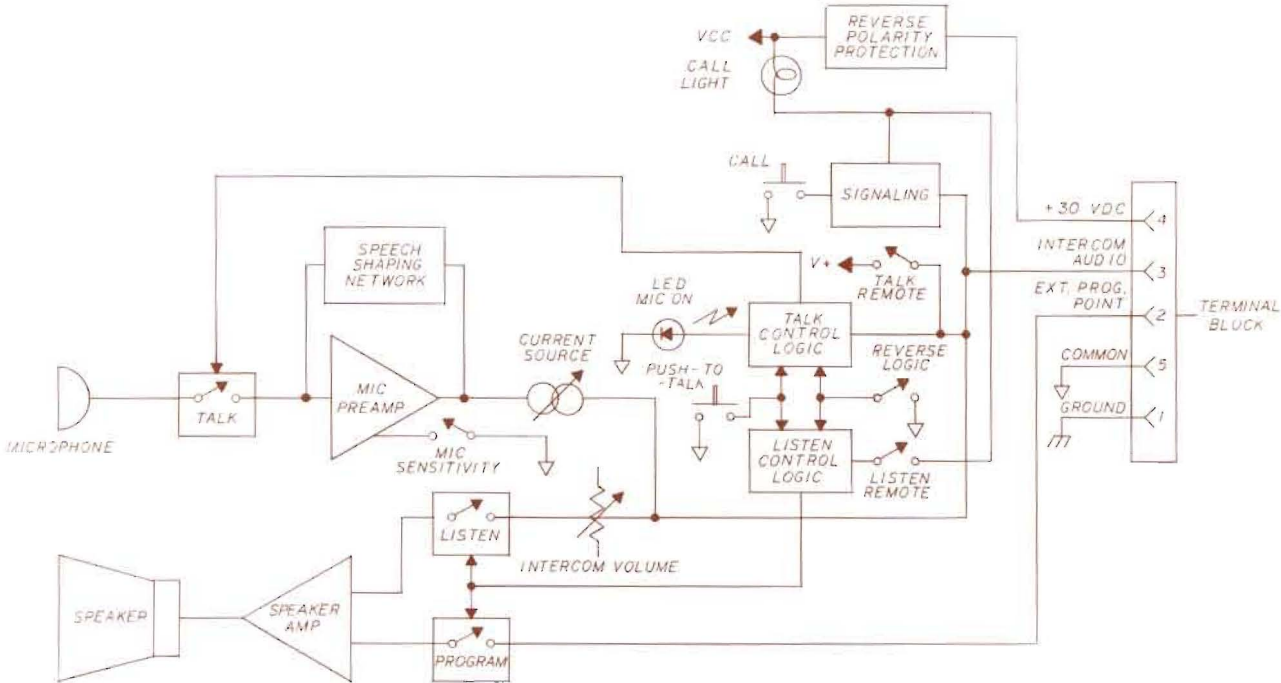
ARCH/ENG SPECS

The intercom station shall be a custom-mounting, 5/32" aluminum panel painted charcoal-brown. It shall be a single-channel intercom speaker station with a built-in, push-to-talk electret microphone. It shall have the controls and terminal strip necessary to interface to the standard Clear-Com system. It shall have a 5-screw terminal strip on the PC Board to allow individual intercom signal, external audio signal, and power to be brought to the intercom. The intercom shall be able to mount inside a 6" by 8" Nema Type 1 electrical box. The intercom's speaker shall be a 3" round, 16Ω type. The intercom's controls shall include an intercom volume adjustment, momentary "mic-on" push-button, Visual Call Signal button and amber "Call" light. The intercom shall contain circuitry that enables the speaker and/or the mic to be activated by the signal circuitry generated at another intercom station in the system. The intercom electronics shall consist of a mic preamplifier, power amplifier, and signalling circuit. Contained within the electronics shall be reversible control logic circuitry. The intercom shall be current-limited and short-circuit-proof and shall have reverse polarity protection. It shall be field-serviceable and replaceable. The intercom bridging impedance shall be greater than 18kΩ over a frequency response of 200Hz to 10kHz. The intercom shall use no transformers for connecting to the intercom line. The frequency response and impedance of the intercom shall not change as other stations join or leave the system. The intercom shall have adjustable mic sensitivity of

±7dB. The mic preamplifier shall have an overall response of 20Hz-12kHz, contoured to enhance speech intelligibility. The speaker amplifier shall have a response of 100Hz to 15kHz. The power amplifier shall be capable of delivering 2 watts into 16Ω. The signal-to-noise ratio shall be 75dB with an equivalent input noise of 121dB. The intercom shall operate from a power source of 12-32 volts and shall draw no more than 17 ma quiescent. The dimensions shall not exceed 8.6" x 6.5" x 1.43" deep. The weight shall not exceed 1.6 lbs. It shall be called a Clear-Com KB-112.

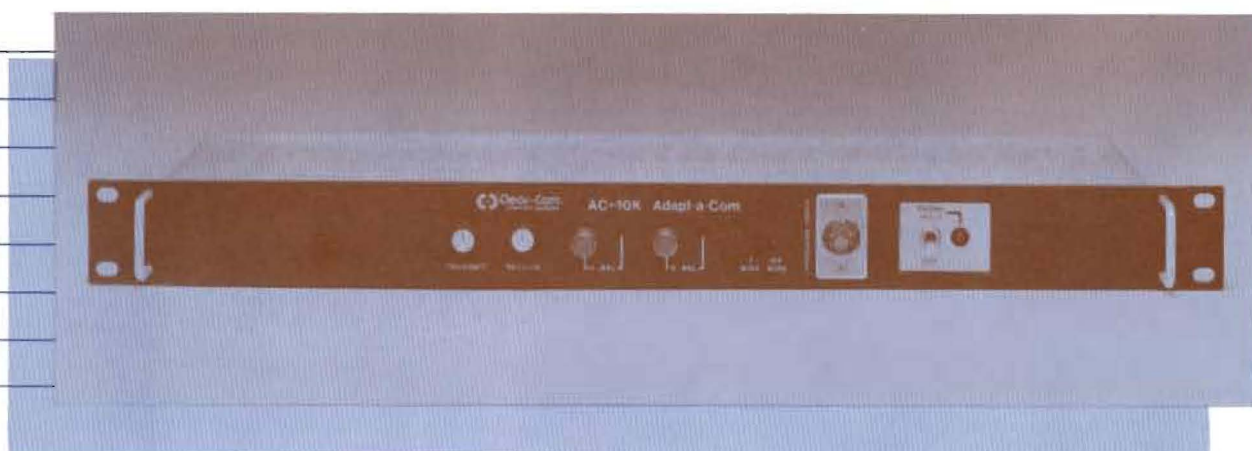
The intercom station shall also be convertible to a single-channel portable type. It shall have the same specification and functions as above. It shall mount in a portable, sloped-front enclosure constructed of .050 cold-rolled steel, with a carry strap and rubber feet. It shall have two 3-pin XLR-type connectors, one male and one female, for intercom interconnection. The enclosure shall be called a Clear-Com P-Box.

KB-112 BLOCK DIAGRAM





# SYSTEM INTERFACE



## AC-10K/AC-10H ADAPT-A-COM

### FEATURES

- Universal interface for 2-, 3-, & 4-wire systems
- Balancing circuits
- Headset test connector
- Transmit & Receive gain controls
- Transformer-isolated
- Uses minimal rack space
- Easy to interconnect
- Available with telephone holding coil (Model AC-10H)
- Powered by Clear-Com line



### DESCRIPTION

The AC-10K "Adapt-A-Com" is a versatile, active hybrid interface that connects the Clear-Com System to a variety of other communications systems. These include two-wire, three-wire, and four-wire telephone systems, carbon systems, and other closed-circuit intercoms.

The AC-10K provides built-in test tones and balancing circuits for fast, convenient set-up. A front panel connector lets you plug in a standard Clear-Com headset for listening to test tones during set-up. The front panel also provides Transmit and Receive controls to adjust the level from Clear-Com to the other system; these controls allow for at least 10 dB of gain.

In the two-wire mode, the AC-10K works with standard telephone company systems or dedicated telephone line pairs. You can feed the telephone line directly through the AC-10K to the Clear-Com System. **Model AC-10H** is a version of the Adapt-A-Com that includes a holding coil. This allows you to dial or receive a telephone call and then hang up the receiver, keeping the party on-line for intercom purposes.

When operating in the two-wire mode, the AC-10K can be set up for high impedance (600 ohm TELCO) or low impedance (16 ohm; e.g. RCA or DAVEN) lines.

In the three-wire mode, the AC-10K looks like a carbon headset, and so can be wired into the headset jack of a television camera, camera control unit, or other carbon headset system.

In the four-wire mode, the AC-10K connects to all four-wire TV camera intercoms and other four-wire intercom systems.

Any Clear-Com Power Supply connected to two Adapt-A-Coms wired together effectively creates an "anything-to-anything" adaptor.

The AC-10K mounts in a standard 19" rack, using only 1.75" vertically. It is powered through the Clear-Com System with standard two-conductor mic cable. The rear panel provides 5-way binding posts for fast, positive connection to the interfaced system.



## SPECIFICATIONS

**Frequency Response:** 150Hz-10kHz,  $\pm 3$ dB

**Load to Clear-Com:** High Impedance (bridging)

**Interface Impedance:** In normal 2-WIRE mode, external unit "sees" 1100 $\Omega$  across AC-10. In LOW-Z 2-WIRE mode, external unit "sees" 4 $\Omega$ . In 3/4-WIRE mode, transmit output impedance is 200 $\Omega$ , and receive input impedance is 500 $\Omega$  (actual)

**Controls:** A & B Balance (to reduce side tone and permit increased gain before feedback).  
A & B Test Switches (to inject test tone and switch monitor headset for balancing purposes)  
Transmit Gain Control  
Receive Gain Control  
Mode Select Switch  
Impedance Select Switch (for 2-wire systems only):  
High Z, approx. 600 $\Omega$ . Low Z, approx. 16 $\Omega$

**Maximum Loop Gain:** 10dB overall

**Transmit Output:** +8dBm maximum into 600 $\Omega$  (normal 2-wire mode)  
125mV maximum into 4 $\Omega$  (Low-Z 2-wire mode)  
+4dBm maximum into 600 $\Omega$  (3/4-wire mode)

**Test Headset Output:** Drives 300- $\Omega$  or higher-Z phones (4-pin XLR male connector)

**Input & Output Connectors:** Four 5-way binding posts for interface to other systems; one (3-pin XLR female connector) for interface to Clear-Com

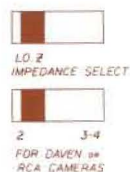
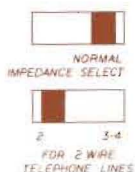
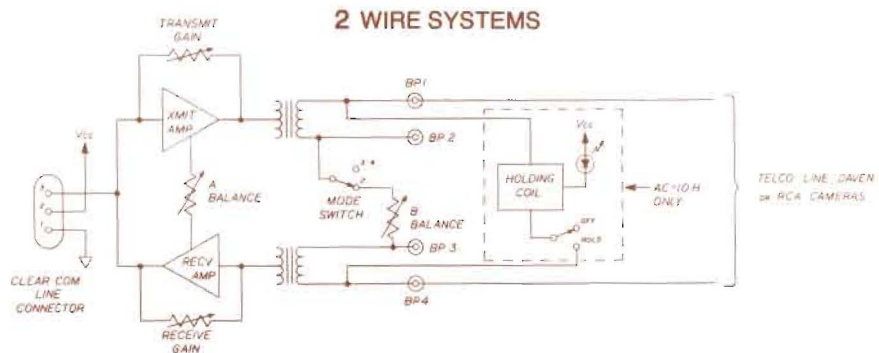
**Power Requirements:** 18ma @ 28V from Clear-Com

**Dimensions & Weight:** 1.75"H x 19"W x 6"D; 2lbs (4.5 x 19.1 x 15.2cm; 0.91kg)

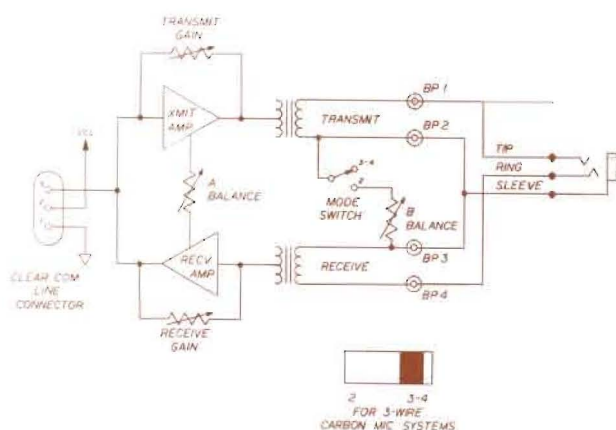
**Options:** Telephone holding coil (AC-10H)

Specifications subject to change without notice  
\*0 dBV is referenced to 0.775 volts rms.

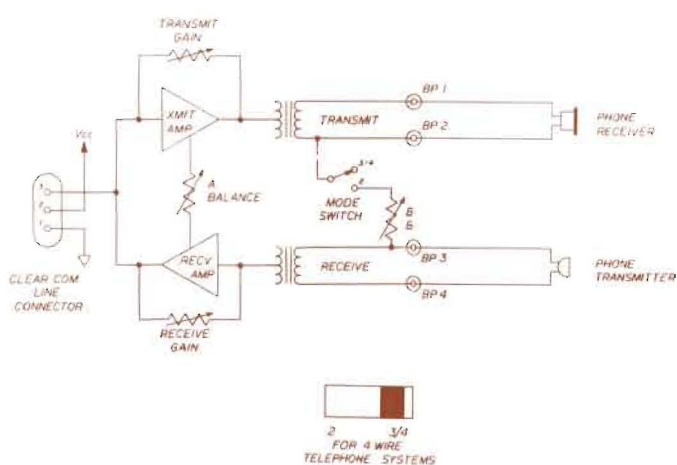
### 2 WIRE SYSTEMS



### AC-10K/H BLOCK DIAGRAMS



### 3 WIRE CARBON SYSTEMS



### 4 WIRE TELEPHONE/CAMERA SYSTEMS



# SYSTEM INTERFACE



## IF4-4 CAMERA INTERFACE

### FEATURES

- Interfaces standard 4-wire or 3-wire TV camera intercom systems
- 1 to 4 intercom channels
- Headset test connector
- Individual Transmit, Receive, & Sidetone controls
- Transformer-isolated
- Uses minimal rack space
- Easy to interconnect
- Powered by Clear-Com line

### DESCRIPTION

The IF4-4 is a rack-mount device that interfaces one to four television camera intercoms with the Clear-Com System. Powered via the Clear-Com interconnect cable, the IF4-4 is designed to match the industry's standard 600 ohm transmit/receive lines (at normal levels) to Clear-Com line level. It works with balanced four-wire or unbalanced three-wire systems.

For each of the four interfaces, the IF4-4 front panel provides Transmit and Receive controls to adjust the level from Clear-Com to the other system. It also has a sidetone adjustment for each system, allowing the user to vary the level of his/her voice as heard in the user's headset.

The IF4-4 rear panel has four connectors for the interfaces (4-pin XLRs) and four connectors for the Clear-Com lines (3-pin XLRs). The 4-pin connectors accept a standard Clear-Com headset, which is used to adjust levels prior to operation.

Toggle switches on the rear panel assign the interfaced systems to separate intercom channels, or put two, three, or all four systems on one "Party-Line."

The IF4-4 is powered by the Clear-Com System interconnection, using standard two-conductor mic cable. It mounts in a standard 19" rack, using only 1.75" vertically.



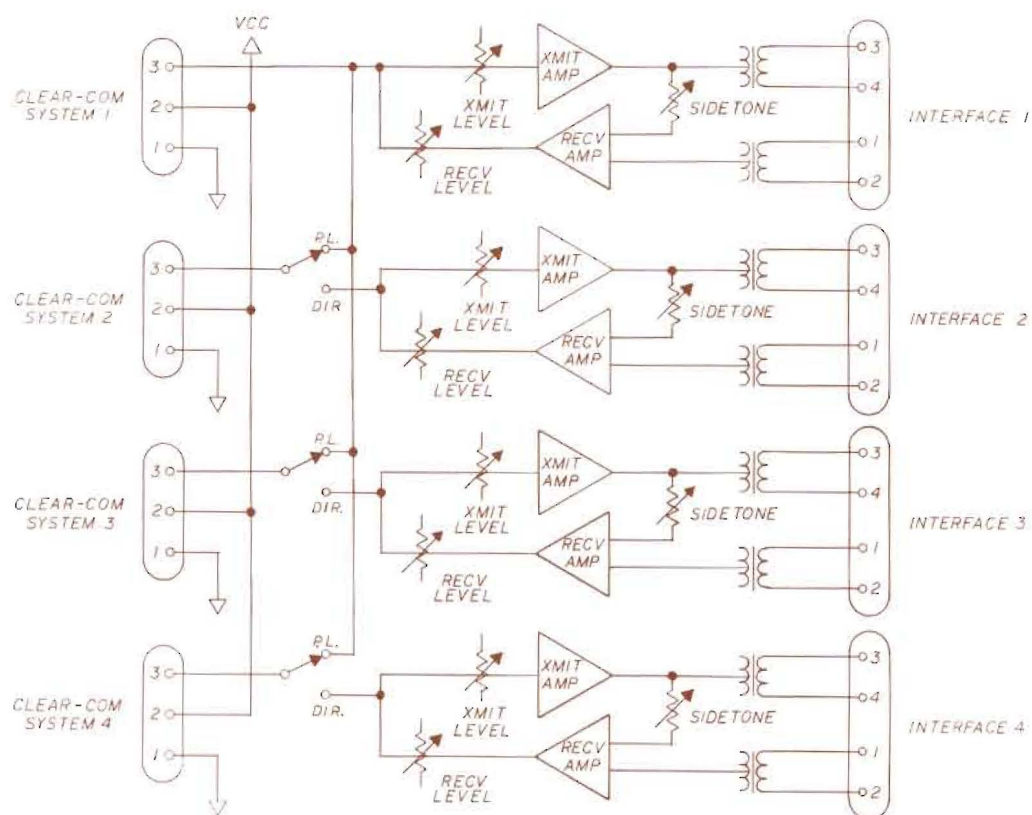
## SPECIFICATIONS

Transmit Level: Adjustable, -30 to +14 dBv  
 Transmit Impedance: 600  $\Omega$   
 Receive Level: Adjustable, -30 to +20 dBv  
 Receive Impedance: 10-15k  $\Omega$   
 Frequency Response: 200-15k Hz, 6dB down  
 Minimum Sidetone Balance: 30dB  
 Distortion: 0.5% THD  
 Power Requirements: +30 volts DC @ 38mA (all 4 interfaces)  
 Connectors: (4) 3-pin XLR female, Clear-Com line  
 (4) 4-pin XLR male, 3-or 4-wire interface line

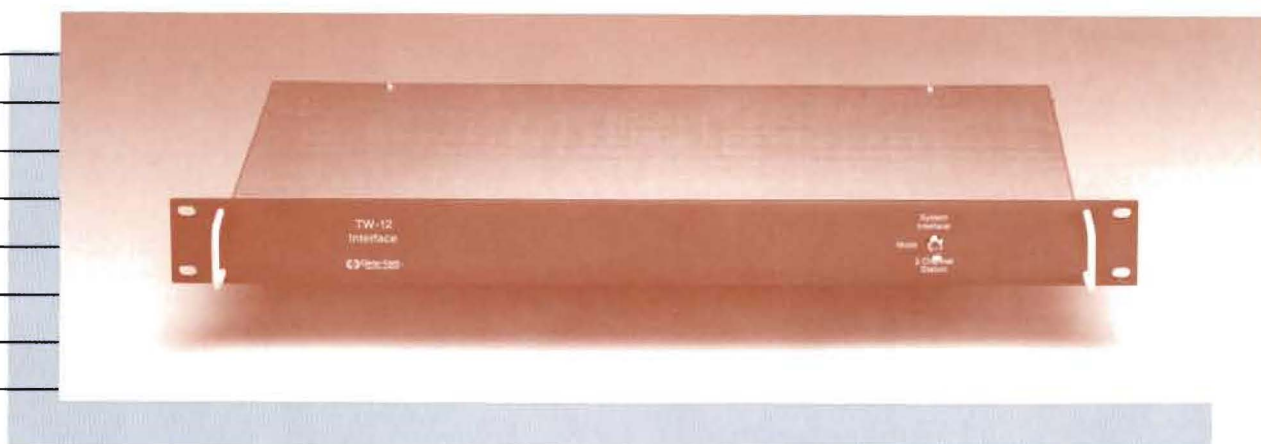
Specifications subject to change without notice

\*0 dBv is referenced to 0.775 volts rms.

## IF4-4 BLOCK DIAGRAM



# SYSTEM INTERFACE



## TW-12 UNIVERSAL TWO-WIRE INTERFACE

### FEATURES

- Interfaces Clear-Com to two-wire ("TW") intercom systems such as RTS
- Allows standard mic cable to carry two separate channels
- Uses minimal rack space
- Simple set-up
- Easy to interconnect
- Transparent to user
- Powered by Clear-Com line

### DESCRIPTION

The TW-12 is a transparent device that acts as an interface between the Clear-Com Intercom System and a two-wire ("TW," e.g. RTS) intercom system. Alternatively, the TW-12 can support up to six TW-type intercom stations with visual signalling (Clear-Com CP-300, RTS BP-300, or the equivalent), or 12 TW intercoms without signalling.

The standard Clear-Com System uses two-conductor shielded mic cable to support one channel of two-way communications, and two or more channels are transmitted via multi-pair cable. Other intercom systems, such as RTS, put **two** intercom channels on the **one** mic cable. The TW-12 Interface translates line levels and supply voltages from two separate

Clear-Com channels to provide a combined two-channel, two-wire output. The interface receives its power through the connection to the Clear-Com System. It also translates signalling between the two systems (tone to DC and vice versa).

The TW-12 provides one male and one female 3-pin, XLR connector for each of the Clear-Com Channels A and B, and a 3-pin XLR connector for the two-channel/two-wire output. The TW-12, once set up, is transparent to the user. It has only one control on the front panel: a toggle switch to select between the internal termination (for TW belt packs) or termination by RTS-type power supply (System Interface).

An auto-termination feature prevents oscillation in partially connected systems.



SPECIFICATIONS

LINE CHARACTERISTICS, CLEAR-COM SIDE  
Level: -15dBv nominal, 0dBv max before clipping\*  
Impedance: 200Ω AC termination, 5000ΩDC

LINE CHARACTERISTICS, TW SIDE  
Level: -5dBv nominal, +3dBv max  
Impedance: 200Ω AC

Gain, Clear-Com to TW: +12dB  
Gain, TW to Clear-Com: -12dB  
Frequency Response: 200-10kHz (±3dB)

SIGNALLING, TW SIDE  
Frequency: 20,000Hz  
Frequency Tolerance: ±100Hz send, ±500Hz receive  
Tone Level: -6dBv minimum send, -30dBv maximum receive\*

SIGNALLING, CLEAR-COM SIDE  
4vdc maximum receive, 11vdc minimum send

POWER REQUIREMENTS: 12-32vdc, 50 ma quiescent plus current for TW stations

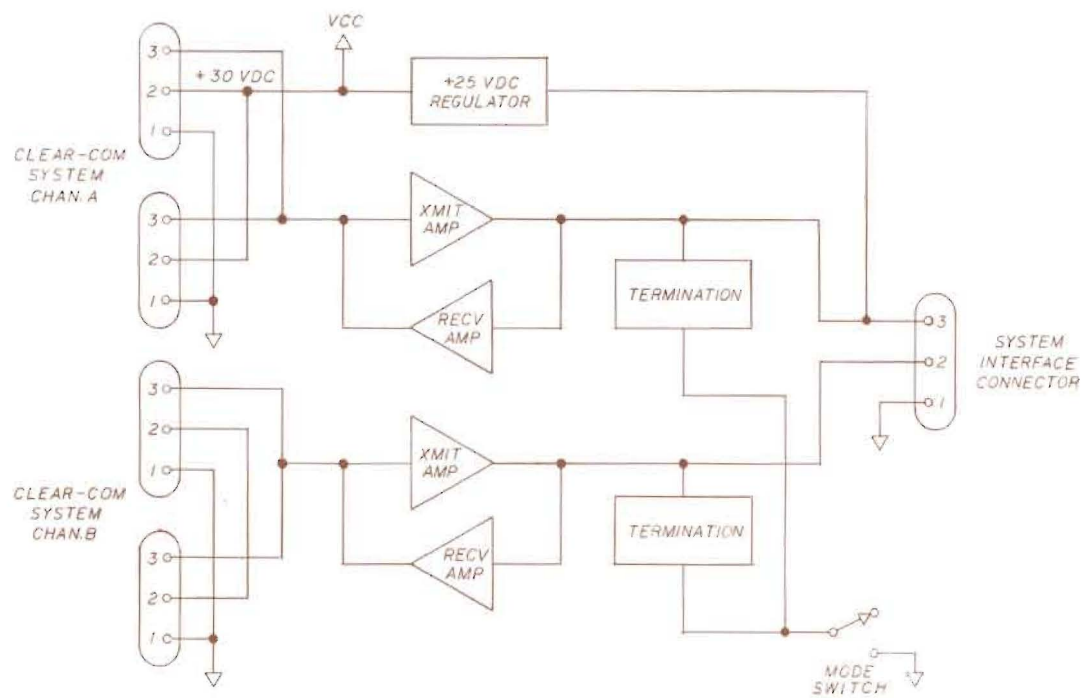
TW POWER CAPACITY: 500 ma maximum (6-12 stations)

DIMENSIONS: 1.75"H x 19"W x 6"D  
44mmH x 483mmW x 152mmD

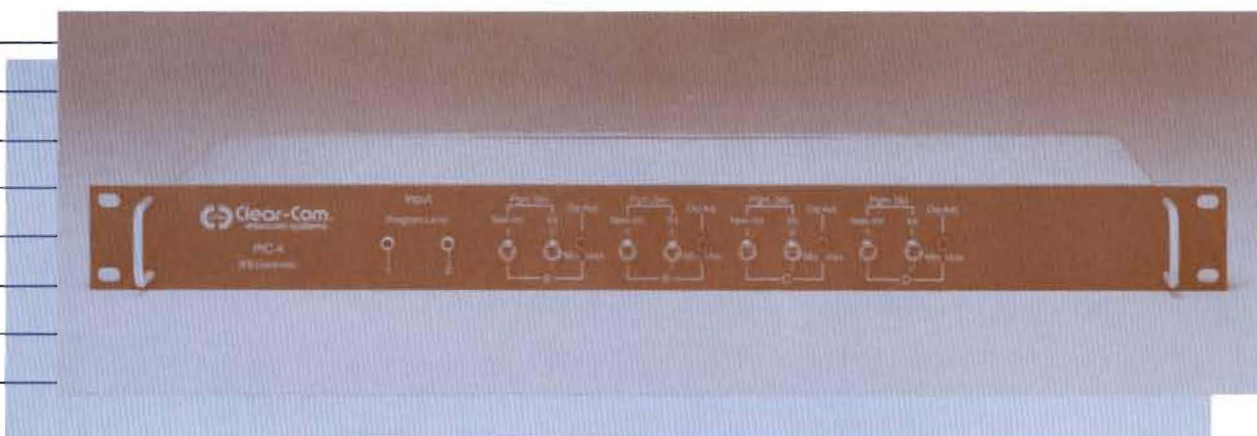
Specifications subject to change without notice

\*0 dBv is referenced to 0.775 volts rms.

TW-12 BLOCK DIAGRAM



# PROGRAM INTERRUPT SYSTEM



## PIC-4 IFB CONTROLLER TR-50 TALENT RECEIVER RS-201 SPLIT-FEED TALENT RECEIVER

### FEATURES

- Compatible with DLC Series and other Clear-Com Main Stations
- Fully integrated within intercom system
- PIC-4 features two program inputs & individual program level controls
- PIC-4 routes program and cues to as many as 8 Talent Receivers
- Program feeds are selectable to interrupt or non-interrupt
- Dip level individually adjustable for each talent output
- Split program feeds available
- Easy to install and interconnect
- Uses minimal rack space
- Broadcast-standard design



### DESCRIPTION

The Clear-Com Program Interrupt System is an "IFB" system that's fully integrated within the intercom system. It is designed for all teleproduction and broadcast facilities.

During production taping or airing, the talent (commentators, musicians, sportscasters, etc.) frequently need to monitor the program audio and also hear cues from the director. Clear-Com's IFB System lets talent monitor program and lets directors interrupt or dip the program to address the talent.

Our flexible IFB System sends one of two program signals to talent, and permits **multiple** intercom station operators to interrupt program and cue talent. (Split program feeds are possible, allowing the talent to monitor a continuous program in one ear and have program interrupted in the other ear. Particularly suited for remote sports applications, a split-feed output is fed to the RS-201.)

The components of the IFB System (PIC-4 and TR-50's) are powered by the connection to the Clear-Com system. The intercom system must include a DLC Series intercom station with at least one IFB Control Drawer (Model IFB-4) or a standard Clear-Com Main Station (rackmount models only) with channels modified for IFB use.

When the director (DLC Main Station operator) presses an IFB button on his station, the station's mic activates but is disconnected from the "talk" portion of the intercom system. The director can

now talk to talent (which talent depends upon which IFB button is pressed). The "listen" portion of the intercom system is not affected, thus allowing the director to continue monitoring the intercom channels during IFB use.

Each PIC-4 provides outputs to four talents. Intercom systems that use DLC Stations can include two PIC-4's, allowing access to up to eight talent.

#### PIC-4 IFB CONTROLLER

The PIC-4 contains all the controls and connectors needed to provide a link between the intercom/IFB stations and the talent receivers.

With each output to talent, the PIC-4 provides a control for dip level adjustment (the amount the program is attenuated when the director cues talent) and switches for selecting which continuous and/or interrupted program each talent will receive.

#### TR-50 TALENT RECEIVER

The TR-50 allows the talent to hear program and cues from the PIC-4 and intercom/IFB system.

The lightweight TR-50 is a miniature belt-pack with a volume control and a clip for attaching it to a belt or under a table-top. It contains an earphone connector, and is supplied with an earpiece, Model TS-1.

continued



### RS-201 TALENT RECEIVER

The RS-201 works with a double-muff "stereo" headset that receives a different signal in each earpiece (such as Clear-Com's DT-109/6 Binaural Headset by Beyer).

The RS-201 is ideal when it is necessary for talent to monitor two separate programs or hear continuous program in one ear and interrupted program with cues in the other ear ("split feed").

### THE INTERCOM/IFB SYSTEM

The IFB System also works with a standard four-channel Clear-Com system; modifications are made at the factory to the intercom channels needed for IFB use. Any number of designated MS/RM-400 or SB-412 Stations can be set up for IFB.

A DLC System intended for IFB use must include an MS/IS-808 Station with at least one IFB-4 Control Drawer. This Control Drawer contains four momentary push-buttons, each of which is associated with a separate Talent output from the PIC-4 Controller. The MS/IS-808 Station contains an ALL IFB pushbutton that simultaneously accesses all talent.



## SPECIFICATIONS

### IFB SYSTEM SPECIFICATIONS

Frequency Response: 100-15k Hz  $\pm 1$ dB  
Distortion: < 1% THD at 1kHz  
Signal-to-Noise Ratio: Better than -55dB  
IFB Line Level: -10dB

### PIC-4 SPECIFICATIONS

CIRCUIT DESIGN: IC amplifiers and solid state switching. Current limited with short circuit and reverse polarity protection

### PROGRAM AMPLIFIERS (2)

Input: 100k $\Omega$  balanced (47k $\Omega$  single-ended), line level  
Input Level: -15dB nominal, +10dB max before clipping\*  
Frequency Response: 150Hz-18kHz  
Gain: 0dB

### MUTE CIRCUITS (4)

Attenuation: 0-50dB  
Control Voltage Threshold: 4vdc

### LINE CIRCUITS (8)

Type: Internally terminated, send only (no listen)  
Level: -15dB nominal, +1dB max before clipping\*

CONTROLS: Program gain adjust (2), Program source select (8), Dip depth (4)

### CONNECTORS

Program Input: (2) 3-pin XLR female  
Intercom Input: (4) 3-pin XLR female  
Talent Output: (4) 3-pin XLR male (or 6-pin for split feed)  
DLC Input: 30-pin Tuchel, male  
Extension: 25-pin "D" connector, male

POWER REQUIREMENTS: 20-30vdc at 30 ma max

DIMENSIONS: 19"W x 1.75"H x 6.6"D  
483mmW x 45mmH x 168mmD

### TR-50 TALENT RECEIVER SPECIFICATIONS

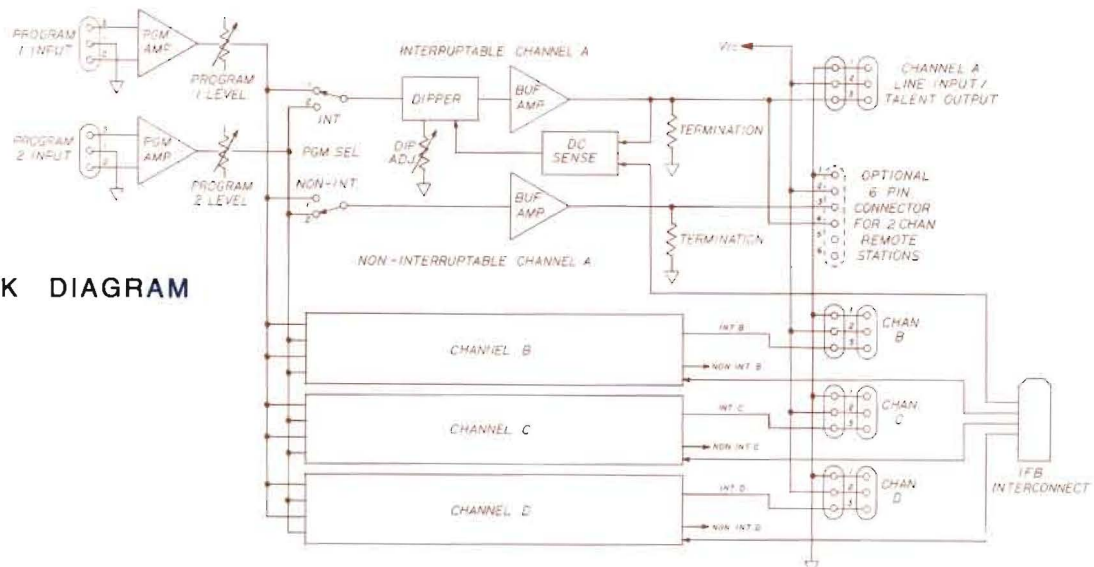
Earphone Type: Dynamic  
Earphone Impedance: 30 $\Omega$  or greater  
Max. Output Level: +20dBm  
Power Required: 10 ma quiescent at 28VDC supplied by Clear-Com line  
Headset Connector: 1/8" miniature jack  
IFB Connector: 3-pin XLR female (at end of 6' cord)  
Dimensions: 1.5" x 1.5" x 3.6"  
38mm x 38mm x 91mm  
Weight: 4.5 oz

### RS-201 TALENT RECEIVER SPECIFICATIONS

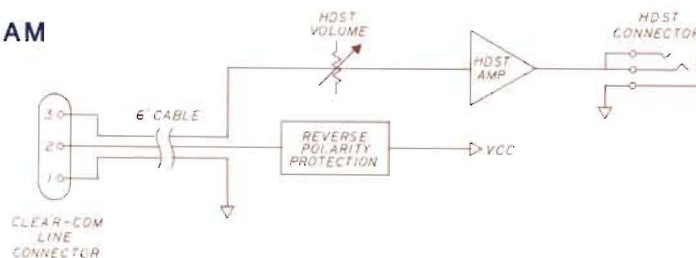
Headset Type: Dynamic  
Headset Impedance: >150 $\Omega$   
Max. Output Level: +20dBm  
Power Required: 15 ma quiescent at 28VDC supplied by Clear-Com line  
Headset Connector: 6-pin XLR male  
IFB Connector: 6-pin XLR male  
Dimensions: 5.25" x 3.75" x 1.5"  
133mm x 95mm x 38mm  
Weight: 16.5 oz

Specifications subject to change without notice  
\*0 dBv is referenced to 0.775 volts rms.

PIC-4 BLOCK DIAGRAM



TR-50 BLOCK DIAGRAM



# HEADSETS & ACCESSORIES

CC-35



CC-55



CC-75B



PH-7



DT-109



CC-240B



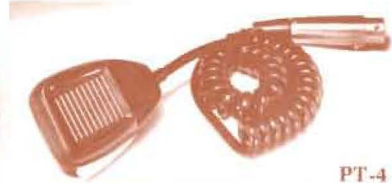
WP-2



QP-100



PT-4



HS-6



## HEADSETS, HANDSET, MICS & ACCESSORIES



## FEATURES

- Noise-isolating dynamic headphones
- Noise-cancelling dynamic mics
- Single- & double-muff styles
- Designed for long-term wear without fatigue
- Rugged, comfortable & lightweight
- Soft, foam-filled ear-cushions
- Designed to match Clear-Com frequency response
- Audio signals are highly intelligible under all conditions
- Consistent, high-quality performance
- Handset, hand-held mic, and accessories available

## DESCRIPTIONS

### CC-35 Single-Muff Headset

This is our lightweight, low-cost headset, specially suited for television camera operators. Feather-light with an adjustable boom, the CC-35 has a dynamic mic that automatically turns off when the boom is swung upward. For extra comfort and consistent clarity, distant between the CC-35's headband and earpiece is adjustable. The CC-35 comes with a four-foot straight cord ending in a 4-pin XLR connector.

*continued*



**CC-55 Double-Muff Headset**

The CC-55 is identical to the CC-35 in comfort, features, and performance, except it has no auto-on/off in the boom. The CC-55 is double-muff style with two earphones wired in series.

**CC-75B Single-Muff Headset**

The CC-75 features a wide dynamic range earphone with a sound-seal cushion. Its adjustable headband contributes to the headset's fit and speech intelligibility. When the wearer swings the flexible boom into an upright position, the dynamic mic automatically shuts off. Our most rugged headset, the CC-75B is built with indestructible ABS plastic, ideal for "on-the-road" and rental applications. It is attached to a 5-foot, flat-coil cord terminating in a 4-pin XLR connector for input to any Clear-Com intercom.

**CC-240B Double-Muff Headset**

The CC-240B boasts the same high-quality features, sound attenuation, and functionality of the CC-75B, but provides two earmuffs wired in parallel.

**PH-7 High-Fidelity, Double-Muff Headset**

The PH-7 is a double-muff set that provides greater isolation from external noise than the CC-75B or CC-240B. This sound-attenuating headset is designed for critical applications and extremely high-noise environments. The PH-7 is attached to a six-foot, coiled cord ending in a 4-pin XLR connector.

**DT-109/6 Stereo Headset by Beyer**

This sophisticated double-muff set with dynamic mic and headphones is specially suited for professional broadcasting applications. Designed by Beyer to match Clear-Com specifications, the DT-109/6 is intended for use with the RS-201 Belt-Pack Station (two channels plus program), the TR-62 Talent IFB Receiver (split program feed), or any Clear-Com Station modified for a stereo headset. The DT-109/6 feeds a different audio signal to each side of the headset.

The DT-109/6 is designed to work under, and be unaffected by, extreme environmental conditions. Its nine-foot straight cord ends in a 6-pin, XLR connector for use with the intercom station.

Models CC-75B, CC-240B, PH-7, and DT-109/6 are supplied with 100% cotton, fitted covers for the vinyl earmuff; the "ear-sock" is available separately for use with other headsets.

**HS-6 Intercom Handset**

The HS-6 is a telephone-style handset with a high-output earphone, dynamic mic, and a push-to-talk switch. It connects to any standard Clear-Com intercom with its 4-pin, XLR connector attached to a six-foot coil cord. The HS-6 is supplied with a durable, black plastic wall cradle.

**PT-4 Push-to-Talk Microphone**

The PT-4 is a low-cost, hand-held mic. It features a convenient push-to-talk mic element and includes a five-foot cord with a 4-pin, XLR connector. Supplied with a mounting bracket, the PT-4 is rugged, compact, easy to handle, and an ideal accessory for any Clear-Com Speaker Station.

**ACCESSORIES**

**QP-100 Interconnect Line-Splitter**

Save cable! This convenient line-splitter provides one input connector and three output connectors (3-pin XLR's), mounted in a rugged, die-cast aluminum box.

**WP-2 Wall Plate**

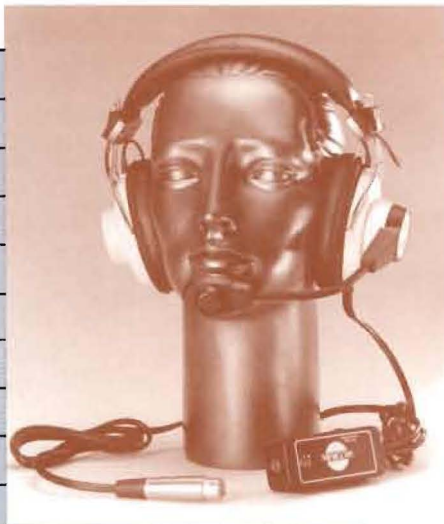
Connect your belt-pack or portable single-channel intercom to the WP-2 and select Channel A or Channel B for communicating! A handy, cable-saving accessory that is ideal for large facilities and permanent installations (especially security system applications).

**HEADSET SPECIFICATIONS**

EARPHONES	CC-35/55	CC-75B/240B	DT-109/6	PH-7
Type:	dynamic	dynamic	dynamic	dynamic
Impedance:	CC-35, 600Ω CC-55, 2 x 300Ω	CC-75B, 600Ω CC-240B, 2 x 300Ω	2 x 400Ω	2 x 300Ω
Sound Pressure Level:	102dB	123dB	124dB	110dB
Frequency Response:	30 - 12k Hz	100 - 10k Hz	30 - 20k Hz	20 - 18k Hz
MICS				
Type:	dynamic, noise-cancelling	dynamic, noise-cancelling	dynamic, noise-cancelling	dynamic, noise-cancelling
Impedance:	200Ω ±40Ω	200Ω	200Ω	200Ω
Frequency Response:	300 - 8k Hz	200 - 8k Hz	40 - 12k Hz	100 - 9k Hz
Noise Cancellation:	-10dB @ 1k Hz*	15dB*	30dB*	15dB*
Mic On/Off Switch:	CC-35 only (in boom)	in boom (shorting)	No	No
CONNECTORS				
Type:	4-pin XLR	4-pin XLR	6-pin XLR	4-pin XLR
WEIGHT:	CC-35, 9.25oz. (262g) CC-55, 13.25oz. (376g)	CC-75B, 16oz. (454g) CC-240B, 24oz. (680g)	27.5oz. (780g)	25oz. (709g)

\*front-to-back

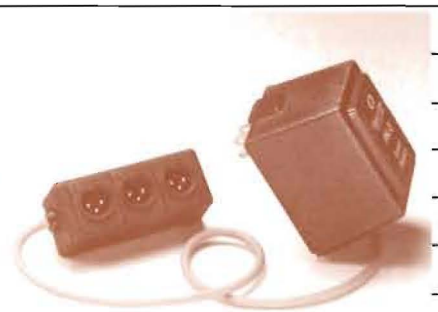
# THE MINICOM® SERIES



**DM-1**



**SM-1**



**PK-3**

## MINICOM® HEADSET STATION

### F E A T U R E S

- High-performance, two-way communicating at a modest price
- Wide frequency response and high volume capability
- Transmits clearly under all conditions
- Easy to use and set up
- Lightweight noise-isolating headset is permanently attached to compact belt-pack
- Soft ear cushions and adjustable headbands
- Available in single- or double-muff style
- Noise-cancelling dynamic mic rejects background noise and is mounted on flexible boom
- SM-1 includes automatic boom-mounted mic-on/off switch
- Electronics enclosed in rugged, die-cast aluminum box
- Individual volume controls and on/off switches
- All units interconnect with standard mic cable
- Compatible with Clear-Com System

## PK-3 POWER SUPPLY

### F E A T U R E S

- Line- and load-regulated
- Supports up to 25 headset stations
- Provides audio termination for entire system
- Short circuit-protected
- Two versions available: operating from 115 - 230 VAC
- Heavy-duty construction
- Compatible with Clear-Com intercom stations

 **Clear-Com®**  
intercom systems



## DESCRIPTION

**MINICOM®** by Clear-Com is widely used in audio-visual, educational, theatrical, video production, and sports applications, yet it also works exceptionally well in noisy industrial and concert sound installations.

The hard-wired Minicom system features low distortion, low noise, and a wide frequency response; all units interconnect with standard mic cable (two-conductor, shielded). All Minicom units are compatible with the Clear-Com Intercom System.

Minicom provides portable, hands-free communicating on a two-way channel (simultaneous talk/listen). Its contoured, wide frequency response and high volume capability assure top-quality performance.

### SM-1 & DM-1

The noise-attenuating headset station, available in single-muff (Model SM-1) or double-muff (Model DM-1) style, is attached to a lightweight, in-line intercom and includes a noise-cancelling dynamic mic for intelligibility in noisy or quiet areas. Each headset station provides a volume control and a mic on/off switch. The mic in Model SM-1 automatically turns on when its flexible boom is swung upward.

The Minicom intercom electronics (SM-1 or DM-1) include a mic pre-amplifier and headphone amplifier enclosed in a die-cast metal box with a belt-clip. The box is attached to six feet of mic cable that ends in a 3-pin XLR connector for system interconnection.

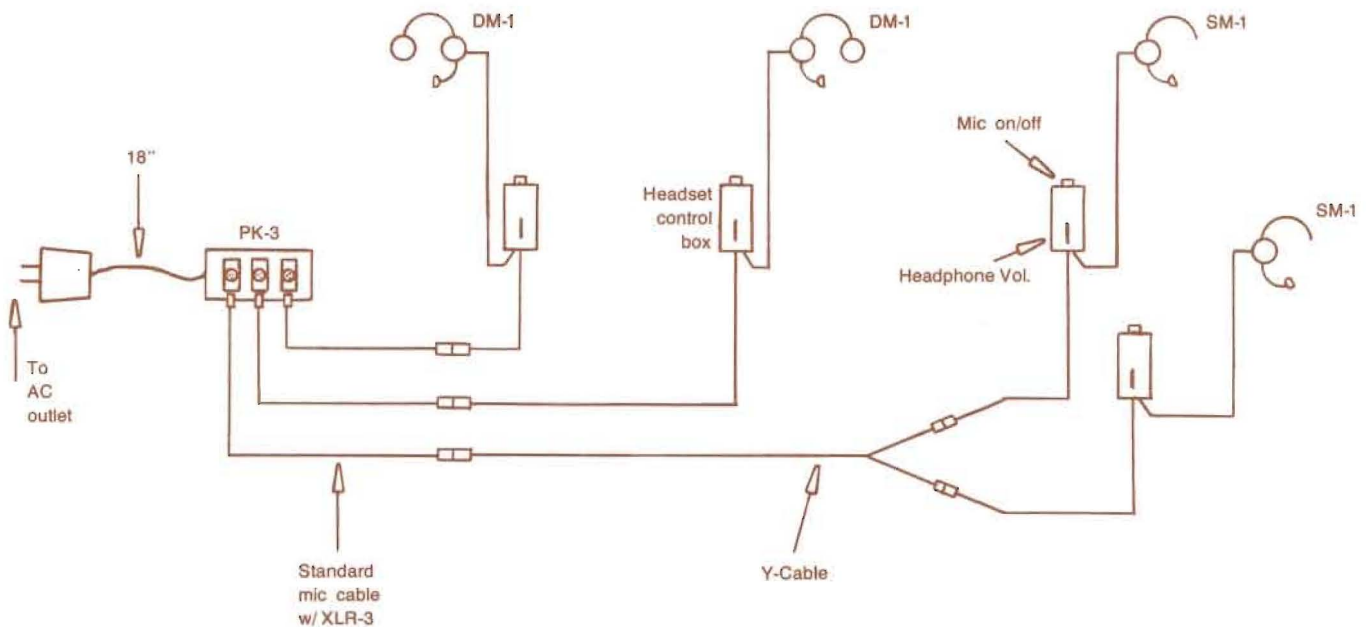
### PK-3 Power Supply

The PK-3 Power Supply supports a system containing up to 25 Minicom headset stations. This compact unit supplies 24 volts DC at ¼ amp, terminates the system, is fully regulated, and incorporates short-circuit-protection.

Compact and rugged, the PK-3 is ideal for portable applications especially when they require speedy set-up and break-down. Enclosed in a heavy-duty box that's attached to a metal "three-way" line splitter, the PK-3 provides three separate 3-pin, XLR connectors for intercom output to the headset stations. Simply plug the PK-3 into a standard AC outlet and it's ready to run Minicom!

PK-3 is not available separately.

Typical Minicom® Set-up



Maximum Capacity= 25 Headsets